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September 18, 1950

STEEL

The Magazine of Metalworking and Metalproducing

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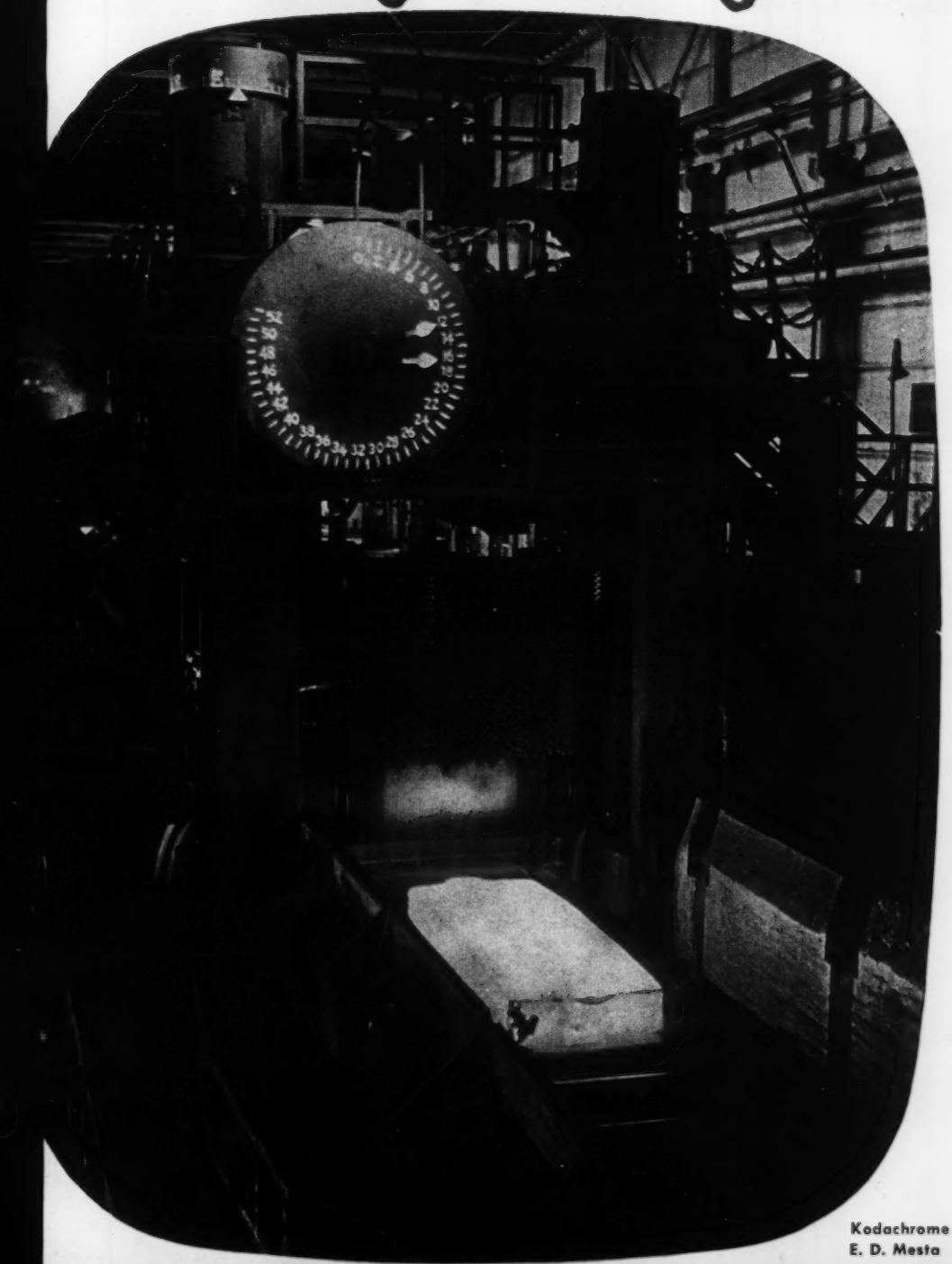
Designed and Built by

MESTA

MACHINE COMPANY, PITTSBURGH, PA.

Modern Reversing Slabbing-Blooming Mills



Kodachrome by E. D. Mesta

NATIONAL TUBE'S new continuous "Stretch-Reducing" SEAMLESS PIPE MILLS

designed and built by Aetna-Standard

National Tube and Aetna-Standard specialists have been working together for several years in the development of the world's first continuous seamless pipe mill now in operation at Lorain. A similar mill has been installed at Gary. These mills, based on the stretch-reducing principle, have been hailed as "one of the greatest advances in the steel industry during the past 50 years."

Aetna-Standard has been proud to work with National Tube in this accomplishment. This company builds most of the seamless tube mills in the world for pipe sizes from 2½" to 26".

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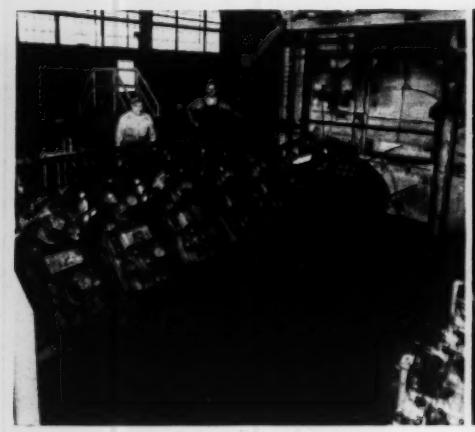

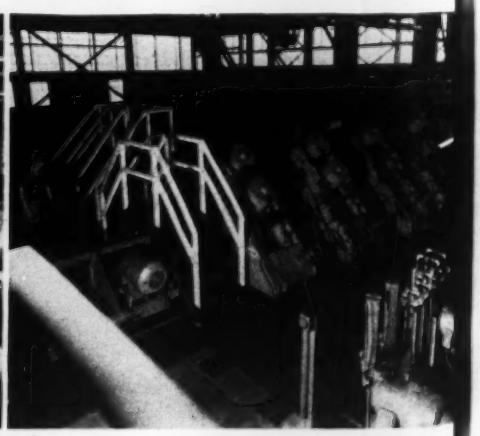

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YOUNGSTOWN, OHIO

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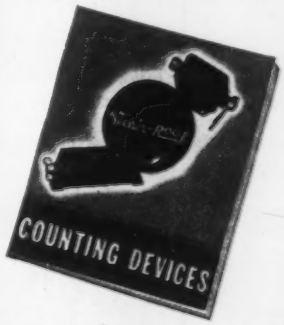
MEDIUM SIZE COUNTER (shown) counts strokes and turns, is *built into* scores of products from oil-well depth measures to tabulating machines and turnstiles. One of hundreds of V-R Counters, basic types of which are shown in FREE 8-PAGE BOOK. SEND FOR YOUR COPY TODAY.



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Behind the Scenes . . .

Classic

The book publishers tell us that if a volume is still selling after ten years, it's on its way to becoming a classic. If that's true, perhaps STEEL has an article that's on the road to immortality. On Dec. 23, 1940, we published "The Triangle of Industry and the Production of Wealth," by F. C. Crawford, president of Thompson Products Inc. The latest request for reprints for the article comes from National Sprayer & Duster Association which says it wants them because "the paper is just as timely today as it was nearly ten years ago."

Mr. Crawford in that article develops the thesis that there's no real basis for grouping "labor" and "capital" separately.

Perspective

To the east of here on page 111 begin STEEL'S special articles in conjunction with the iron and steel exposition to be held in Cleveland Sept. 26-29. Steel Plant Editor John Knox has a story on steelmaking trends and developments. A pictorial shows you some of the new installations in steelmaking that make this country well prepared to meet the needs of an emergency. The program of the Association of Iron & Steel Engineers which is sponsoring the exposition is given for your convenience and the exhibitors at the show are listed.

Get Your ABC

If you go to the AISE convention next week, stop in at STEEL'S booth (81, 82, 83) and pick up a copy of the new ABC of Iron & Steel. It'll cost you only $10 and worth every cent of it. If you can't make the convention, write to Elsie Ihlenfeld, STEEL, 1213 West Third St., Cleveland 13, Ohio. She'll send you a copy, bill you later.

August Quote

Assistant Editor Ed Karpick has made the *Congressional Record*, although his name never appears in that august publication. Rep. Antoni N. Sadlak (Rep., Conn.) inserted a story of Ed's in the Aug. 28 issue of the *Record*. Mr. Sadlak was using the article which was on the machine tool situation and appeared in STEEL, July 24, p. 48, to emphasize his belief that the industry is not receiving the legislative consideration that it should.

September Scene

We have just torn off the August sheet from our General Electric Co. calendar. (We don't know why, but we never remember to have the current month before us until it's at least half over.) GE's September picture is "Power in the West."

We're glad we turned up September because that picture—pine trees, rugged mountains, a lake in the background—sets us up for our vacation that starts soon. Not that we're going very far West, but that picture has a far greater "holiday" pull to it than the average contrived scene showing sun at the seashore or malarkey in the mountains.

Geraldine, our friend, night editor and cleaning woman in the building, will pinch hit for the next week or two.

Puzzle Corner

First in with the correct answer to the Sept. 4 problem about the cards were Glenn F. Loud of Gasport, N. Y., and M. S. Bailey of Machine Products Corp., Montreal, Que. The order of the cards should be 3, 8, 7, ace, queen, 6, 4, 2, jack, king, 10, 9, 5.

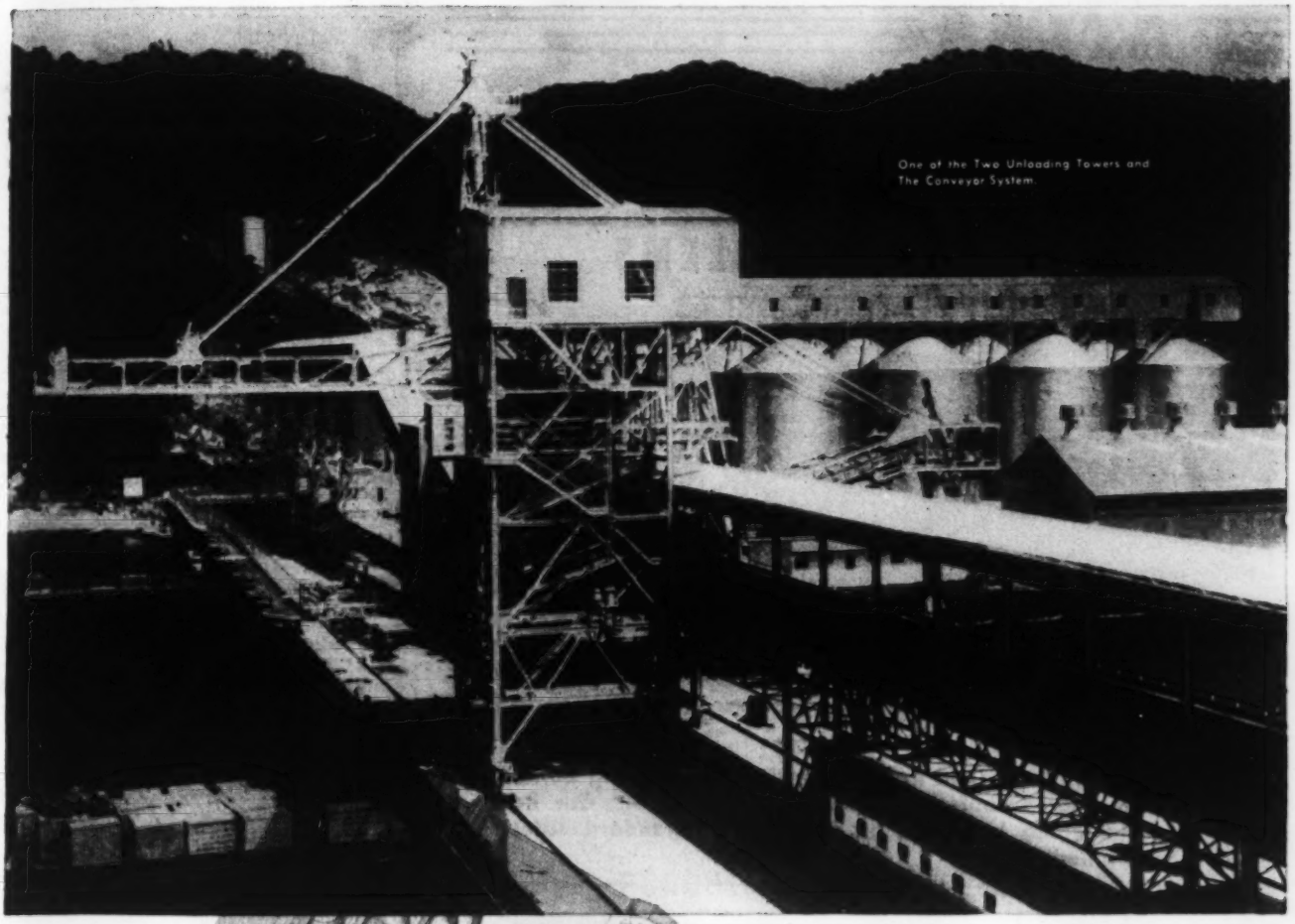
Lt. Cdr. A. R. Simpson sends us this one:

Charley Jones is usually met at the station by his wife, Sarah, at a certain time each evening and driven home. One day Charley left his office an hour earlier than usual and arrived at his home station an hour earlier than he usually arrived there. Sarah, of course, was not there to meet him, so he started walking home. His wife met him along the road as she was driving to meet the train he usually took. She turned the car around immediately, and they both arrived home 20 minutes earlier than usual. How long did the man walk before his wife met him?

Shrdlu

(Editorial Index—page 69

Published every Monday by the Penton Publishing Company, Penton Building, Cleveland 13, Ohio. Subscription in the United States and possessions, Canada, Mexico, Cuba, Central and South America, one year $10; two years $15; all other countries, one year $18. Entered as second class matter at the postoffice at Cleveland, under the Act of March 3, 1879.



One of the Two Unloading Towers and The Conveyor System.

taneously fore and aft, unload shuttle vessels at the rate of 1000 tons per hour.

Each of the Unloading Towers is a rope trolley rig using a 6 ton bucket operating on a 30 second cycle. All motions of the bucket are controlled by varying the voltage generated on each tower. Power is fed to the towers at 440 volt 3 phase 60 cycle. It is converted to variable D.C. voltage for each motion by means of a 28,250 pound Fly Wheel Type MG set. The machinery house, in which the MG set and the bucket and trolley engines are mounted, is located at the top of each tower, 85 feet above dock level.

The operator's cab, carrying all master switches controlling the operation of the tower, is mounted on a heavy ram and is moved out over the hold of the vessel over which the Tower is working. Whenever the Tower is to be moved from one vessel to another the Cab can be retracted to its traveling position immediately against the front portal. The operator of the Cab has a full view of the hold at all times and thus is able to guard against the bucket hitting anyone who may be working in the hold.

Since Bauxite must be kept dry, ordinary methods of keeping dust to a minimum by sprinkling could not be used. The space above the hopper where the bucket is dumped is completely enclosed, top and three sides, with only the front being left open to permit entrance of the bucket. All chutes and transfer points are covered.

Ore Bridges
Railroad Car Dumpers
High Lift-Turnover-Rotary
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30 TON COKE CAR

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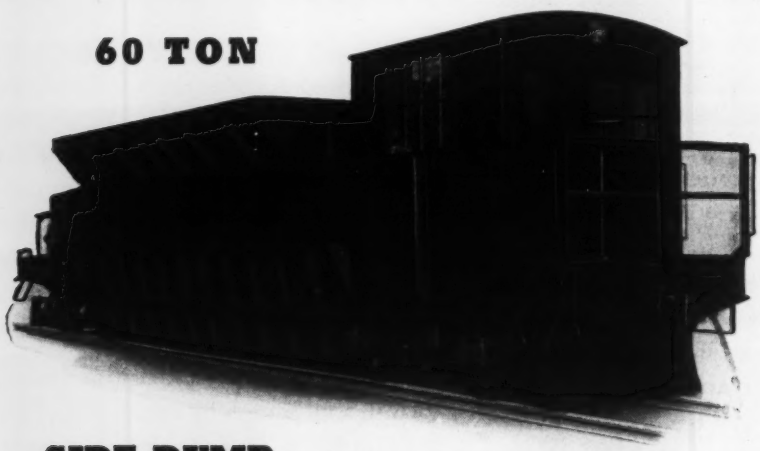

SIDE DUMP ORE TRANSFER CAR

900 cu. ft. capacity, two-section hopper with electric heaters. Each section has independently-operated discharge gates. Car is equipped with air brakes, automatic couplers, headlights and whistle. Each truck mounts one 75-HP motor.

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ENGINEERS MANUFACTURERS

LETTERS
TO THE EDITORS

Aluminum, That Is

In reading the Aug. 7 issue of STEEL, I was impressed with the article on page 55 dealing with the freight car situation as it exists today. I am wondering if you realize that the photograph accompanying this article is actually one of ten aluminum box cars built by the Chesapeake & Ohio railway. With exception of centersills, bolsters and crossbearers, these cars were constructed entirely of aluminum alloys over the standard A. A. R. design. Average . . . weight saving is more than four tons. . . .

F. A. Pitsch, Railroad Section
Aluminum Co. of America, New Kensington, Pa.

Japan In On Our Acts

Much attentions are attached to the proceedings of "Selective Service Act" and "Emergency Power Act" which were introduced to us under the caption "The Score on Mobilization" in your

July 10 edition, page 55. Japanese industry is greatly concerned with that of U. S. A. We are always studying not only U. S. industrial situations, but also the laws and regulations which might influence our industry. Such being the case, will you kindly inform us the details of the above-mentioned acts.

K. Matsuoka, Wakayama Iron Works,
Shin Fuso Metal Industries Ltd.,
Wakayama City, Japan

• *See the Sept. 11 issue, page 59, for a summary of the defense act of 1950.*

Editorials Appreciated

This is just a note to compliment you on your well-worded, thoughtful message of July 3rd, entitled, "Fateful Decision".

Frank F. Rose, General Manager
Edgcomb Steel Co., Charlotte, N. C.

STEEL, July 24, presented a very appropriate editorial, "Let's Be Realistic". We believe more people ought to read that than will come in contact with your magazine. May we have your permission to reprint it?

W. G. Carter, President
Faitoute Iron & Steel Co. Inc., Newark, N. J.

• *Permission granted.*

Low Down on Lomatic

Would you be good enough to mail me the address of Loma Machine Mfg. Co., New York, which manufactures the new Lomatic machine described on page 65 of your July 31st issue?

T. M. Templeton
Formsprag Co., Van Dyke, Mich.

• *The continuous drawing, straightening, cutting and polishing machine is made by Loma, located at 580 Fifth Ave., New York 19, N. Y.*

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STEEL

The Magazine of Metalworking and Metalproducing

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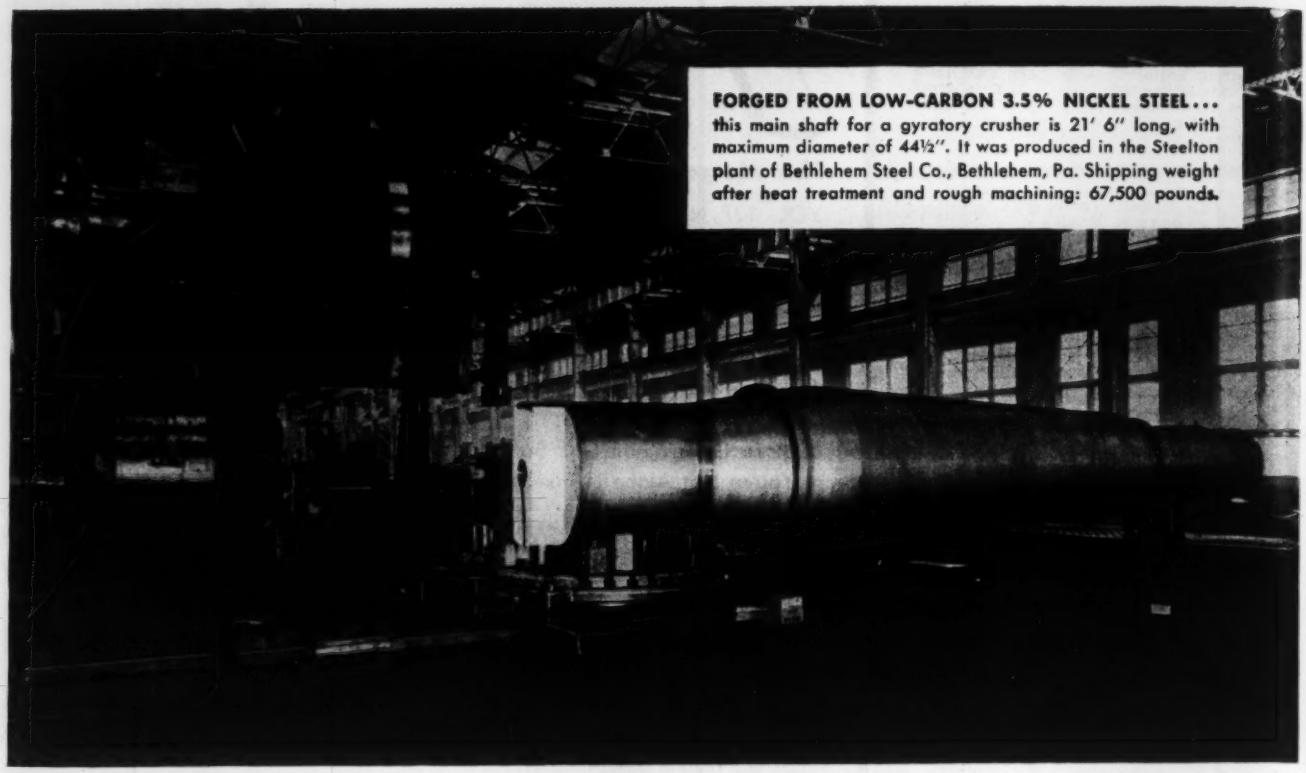
Next Week ... **Tool Control Begins at the Crib ... Bulbous Bumper Guards Change Joining Procedure ... Which Coolant? ... Self-Centering Rolls May Revolutionize Material Conveying.**



FORGED FROM LOW-CARBON 3.5% NICKEL STEEL... this main shaft for a gyratory crusher is 21' 6" long, with maximum diameter of 44½". It was produced in the Steelton plant of Bethlehem Steel Co., Bethlehem, Pa. Shipping weight after heat treatment and rough machining: 67,500 pounds.

how NICKEL assures

Superior Mechanical Properties

in heavy forgings..

Frequently, forgings are so large that only a limited portion of the mass can be worked under the hammer or press in one operation...

And even when dimensions permit liquid quenching, the section sizes ordinarily involved limit the cooling rates and, correspondingly, the response to heat treatment.

In large forgings, therefore, improved strength and elastic properties are much more dependent upon a judicious selection of alloy content than is the case with smaller sized articles.

That's why BETHLEHEM STEEL COMPANY produces many heavy forgings from nickel alloyed steels...

For nickel, either alone or in combination with other alloying elements, exerts several highly beneficial influences. Its strengthening effect on ferrite is independent of carbon content or heat treatment of the steel, while its effectiveness in reducing the rate and temperature of the upper transformation, induces a better response to the necessarily milder heat treatments used.

The forged shaft shown above, is an example. For some applications, and particularly when service temperatures are below 0°F., Bethlehem produces large forgings in 0.15% carbon, 3½% nickel steel. Shafts of this composition are giving excellent service in large gyratory crushers operating in northern United States and Canada.

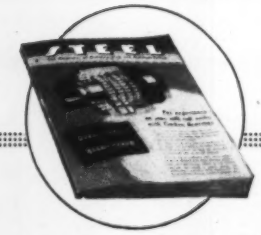
Specify nickel alloy steels to assure peak performance of vital parts in *your* products or equipment. Send us the details of your problem for our suggestions. Write us now.

EMBLEM OF INCO SERVICE

TRADE MARK

Over the years, International Nickel has accumulated a fund of useful information on the properties, treatment, fabrication and performance of engineering alloy steels, stainless steels, cast irons, brasses, bronzes, nickel silver, cupro-nickel and other alloys containing nickel. This information is yours for the asking. Write for "List A" of available publications.

THE INTERNATIONAL NICKEL COMPANY, INC. 67 WALL STREET NEW YORK 5, N.Y.



September 18, 1950

Reappraise the Future

Last week witnessed a number of happenings of good omen. One was the resignation of a secretary of defense who had lost the confidence of the public and his replacement by a man who stands high in public esteem. A second was the collapse of the all-out offensive of the enemy in Korea and the apparent indication that the United Nations have enough manpower and supplies to hold their present position and perhaps to expand it in the near future. Thirdly was a splurge of buying which carried the stock market up to a four-year peak for all issues and to a 19-year peak for railroads.

These developments, coupled with what we said last week about the desirability of reappraising steel capacity in the light of circumstances which have entered the picture since the Korean fighting began, indicate that a new condition confronts us—a condition so startling in its possibilities that we should examine it from an entirely new perspective.

Up until June 25 all of us were banking on the prospect of a return to "ordinary circumstances" in the not too distant future. The attack on Korea shattered this ill-founded delusion. Now we feel that we should plan on a crisis-after-crisis routine for an indefinite period.

This routine demands high operation of the nation's facilities. It means an increase in production, more jobs, more profits, more taxes, and many other "mores." In short, it means more prosperity, even though much of it may be artificial.

Corporations are beginning to sense this new outlook. Ford Motor Co., for instance, announces it has surveyed its possibilities in the next decade and has come up with a decision to gamble $600 million in plant expansion to fortify its competitive position in motordom. Hundreds of other companies are on the verge of making comparable decisions.

We are tackling global commitments which will tax our industrial capacity and in this process we are going to pile up a substantial volume of deferred civilian demand. The sum total of this is a lush market for an unstated period.

Add up your own score! Refigure the future! Your prospects probably are quite different than they were three months ago.

* * *

DOING A GOOD JOB: Next week—from Tuesday, Sept. 26, through Friday, Sept. 29—thousands of persons identified with the steel industry will go to Cleveland to attend the exposition and convention of the Association of Iron & Steel Engineers. The theme of the four-day event is "Engineered Efficiency in Steel Plant Improvement."

The words "efficiency" and "improvement," when applied to the steel industry, take on special significance because of the situation which confronts the nation today. If there is any one thing that will deter the Kremlin from launching an all-out war against the United States, it is the Kremlin's respect for the tremendous potential of American industry. That potential depends largely upon the ability of the basic iron and steel industry to provide adequate supplies for the nation's workshops.

The challenge to steel is two-fold. It calls for improvement in quantity and in quality. On both scores, the industry has made notable ad-

(OVER)

vances during the past decade. If present performance and planning is any criterion, the coming decade will witness improvements in both quantity and quality far surpassing anything we have seen in the past.

In a period when criticism of everything is rampant on a world-wide basis, the steel industry has been a natural target for demagogues. We have a conviction that persons who attend the 1950 exposition and convention of AISE will go away firmly convinced that the engineering branch of the industry is on its toes and doing a superlative job. —pp. 111, 115, 118, 121

* * *

PLACES WORK ABROAD: Aetna-Standard Engineering Co. has established relations with manufacturing associates in England, France, Italy, Germany and Japan with the idea that in the future most of its products sold in these countries will be manufactured in the country where the business originates. The local manufacturers will obtain engineering on Aetna-Standard products on a percentage basis.

This idea is not new. Some American equipment manufacturers have pursued the policy to a limited extent in the past. However, current conditions at home and abroad make it more attractive, in some instances, than heretofore. Costs are lower abroad. Also the plan avoids the complications of import taxes and currency regulations. It may be worth re-examination in the light of the peculiar circumstances of the present. —p. 89

* * *

USE NEIGHBOR'S BUCKET: When E. R. Breech, executive vice president of Ford Motor Co., attended a luncheon meeting of the Detroit Economic Club last week, he was subjected to some good-natured kidding about Ford's new supplementary agreement with the UAW-CIO. It will be recalled that the new pact, negotiated over the Labor Day week-end, gives Ford employees increased wage rates and pensions and ties in future wages with the cost-of-living index. Thus Ford has a set-up very similar to that of General Motors.

In reply to those who joshed him, Mr. Breech said, "If my neighbor's house catches fire and the sparks set fire to my roof, I'm not going to argue about using his bucket." Incidentally, dozens of other automobile and parts companies are finding it convenient to use the same bucket. Strangely enough UAW, which once said it didn't want wages tied to cost of living, now is profiting from that arrangement.

—p. 91

* * *

RECHECK SUBSTITUTES: Because of reduced allotments of nickel since July 1, steelmakers are being forced to scrutinize orders for some high alloy steels more carefully than heretofore. One producer is checking all orders for steel containing over 1.5 per cent nickel to see if the customer can use some other steel as a substitute. A number of mills are returning orders for nickel alloy steels which are not intended for defense jobs. In some instances, orders for chromium alloy steels are being treated similarly.

This increasing difficulty in obtaining high alloy steels is reviving interest in substitutes. It may bring back into prominence the National Emergency (NE) steels that were developed during World War II. It will be remembered that they had lower and different alloy contents than the regular alloy grades. Some NE steels have been incorporated in the list of standard steels.

Alloy steel consumers should recheck the expedients they employed in World War II. They may come in handy again. —p. 79

* * *

SURVEYS STEEL NEEDS: National Production Authority is buckling down to its important job of seeing that sufficient materials are made available for defense work. Right off the bat it is apparent that five million tons of steel will be required to build the freight cars that will be needed in the next two years. The Munitions Board estimates that 4.1 million tons of steel will be required in the next year for direct military purposes. That's only a start.

Obviously these requirements can be supplied only by two methods—diversion of steel from civilian consumption and acceleration of the construction of additional capacity. An example of the first expedient is the current talk of curtailing automobile production by a million vehicles a year and of cutting down output of other mass produced civilian products accordingly. As to the second expedient, it is likely that the present program for adding 5 million tons of ingot capacity by the end of 1952 will be accelerated and expanded. —p. 77

E. C. Shaner

EDITOR-IN-CHIEF

News Summary

LESS BUTTER—You may as well face it now. Curtailments in civilian goods production—automobiles, refrigerators, stoves, home construction—are going to become necessary before many months pass (p. 77). Essential civilian programs, such as freight cars, are going to require a lot of steel. Direct military needs will expand enormously. Steel men now figure on 12 million tons a year by next July, as contrasted with the Munitions Board's early September estimate of 4.1 million tons for the next 12 months. And you steel buyers probably never had a more difficult job in obtaining steel than you are experiencing right now (p. 78).

LEANER ALLOYS—Did you use National Emergency (NE) steels during the last war? Better dust off your experience with these leaner alloys. An acute nickel shortage is shaping up changes in the grades of steel that will be available (p. 78). It may be necessary to effect changes in working methods. . . Stainless steel welding rods soon will be rationed by producers.

STABILIZATION—Although the framework of the defense organization is being set up rapidly (p. 78), don't look for wage and price controls until after the elections. The administration wants to give the labor unions time to get wage increases before effecting wage controls.

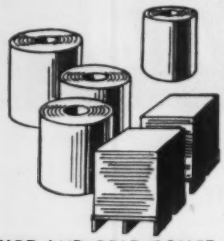
EXPANSIONS—The Korean war has tilted the expansion plans of American industry sharply upward. Capital equipment expenditures now are estimated at 17.9 billion for the year, up 1.8 billion from estimates at the beginning of 1950. Heavy engineering awards are 46 per cent ahead of 1949 (p. 97) . . . Ford Motor (p. 91) is spending $600 million for additions . . . The steel industry is expected to accelerate its expansion program.

MORE LAKE SHIPPING—The probability of still higher iron and steel production is prompting the building of new large ore carriers on the Great Lakes (p. 80). Five ore boats and a limestone carrier have been order, others are planned . . . Railroads have reduced tariffs of shipments of imported ores from eastern seaboard ports to Midwest steel mills (p. 80).

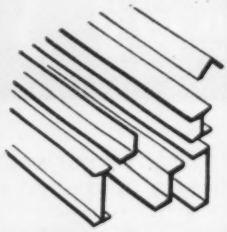
PLAINTIVE CRIES—While U. S. industry is crying for more and more steel, German steelmakers continue to plead with the Allies for an easing in steel production restrictions. The German steel trade has to pass up many attractive American offers; the Germans hate to pass it all up but they must (p. 88) . . . Because of bigger demands from the home market and increased overseas demands the British steel capacity will be taxed heavily this winter. It all adds up to this: Don't count very heavily on foreign producers to fill the gap that our rearmament will thrust upon your steel supply.

SHAPE OF THINGS TO COME— It was in the second year of the last war before machine tool and industrial equipment people hit their peak (p. 79). But it won't take that long if there's another allout emergency. Because of phantom orders for 100,000 pieces of equipment the U. S. ought to be ahead of the game this time. You can expect to see a sustained demand for machine tools and allied equipment in the months ahead although you can't expect to see orders for new machine tools to follow hard on the heels of orders for military items that are given to prime contractors. It may take months, sometimes, before machine tools contracts are let.

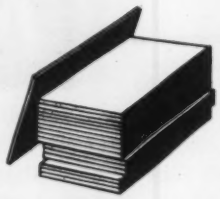
HERE AND THERE IN INDUSTRY—Washington Steel Corp. achieved the theoretical capacity goal of 1500 tons monthly of stainless on its 36-inch Sendzimir mill (p. 81). Reliance Electric & Engineering Co. bought a controlling interest in another electric motor and accessories manufacturer, Commonwealth Electric Co. Ltd. . . Flexible Tubing Corp. will move to Guilford, Conn. (p. 82). Capewell Mfg. Co. acquired V-Mac Industries Inc., manufacturer of pipe threading tools, and will move production facilities from Guilford to Hartford, Conn. (p. 83).



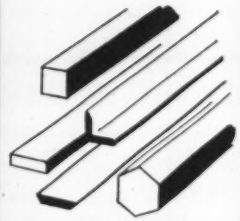
HOT AND COLD ROLLED SHEETS AND STRIP



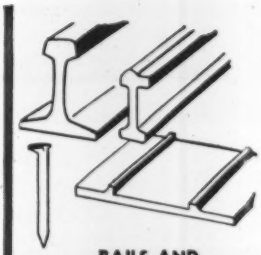
STRUCTURAL SHAPES



CARBON STEEL PLATES

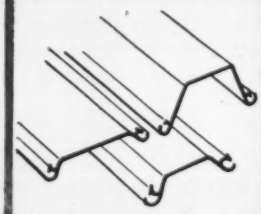


CARBON STEEL BARS

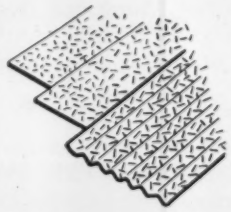


RAILS AND TRACK ACCESSORIES

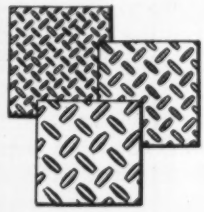
HI-BOND* REINFORCING BARS



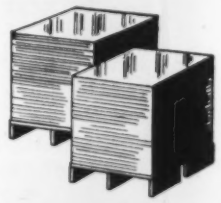
SHEET PILING



GALVANIZED SHEET PRODUCTS



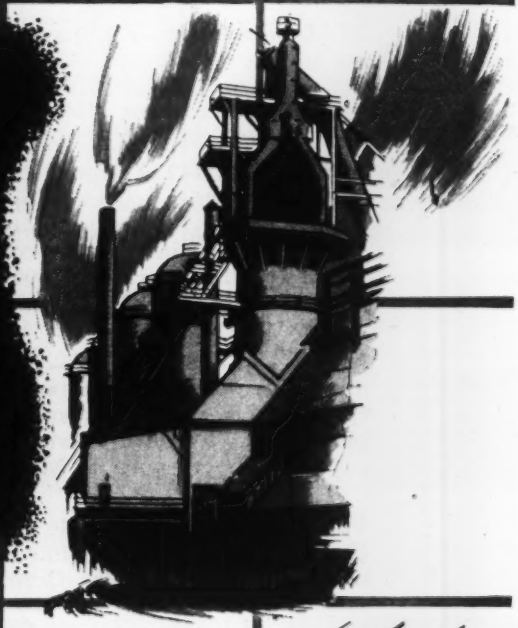
4-WAY* SAFETY PLATE

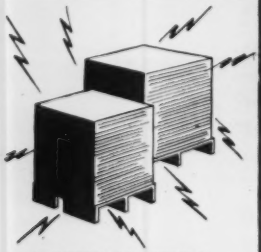


TIN MILL PRODUCTS

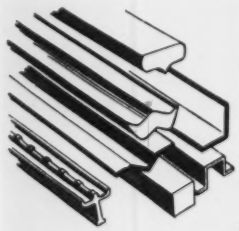
ENAMELING IRON AND TI-NAMEL* SHEETS

you can rely on INLAND for the RIGHT STEEL

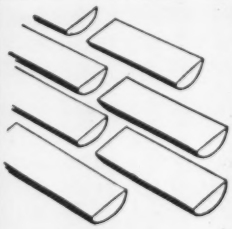




ELECTRICAL SHEETS

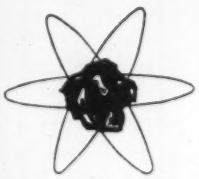


RAIL STEEL PRODUCTS

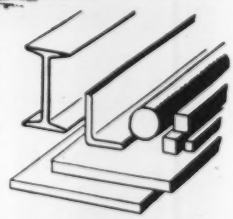


PIG IRON

LIMESTONE



COKE BY-PRODUCTS



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STEEL
A PENTON PUBLICATION

More Guns Mean Less Butter

Automobile output curtailment to free steel for larger freight car program and expanded military production studied. More steel expansion asked

WATCH for cutbacks in automobile and other civilian goods production. They may come sooner than you think.

While national defense administration officials deny they are contemplating use-limitation orders in the immediate future, curtailments in less essential civilian production is going to be necessary to free steel and other materials for essential civilian and military programs now being planned.

More Steel for Cars—Five million tons of steel will be required to build the freight cars that the defense agencies say will be needed in the next two years. This will provide for a net increase of 150,000 new cars plus replacements for those that are retired in the next 24 months. Productwise, this means 2,225,000 tons of plates, 1,075,000 tons of shapes, 650,000 tons of bars, 500,000 tons of sheets, 400,000 tons of wheels and axles and smaller tonnages of other products will go into new freight cars.

Where is the steel coming from? Staff members of the National Production Authority figure that the easiest way to free it would be to curtail auto production by a million units a year. The automakers, they say, would not suffer because they will be getting new contracts for tanks, aircraft engines and other military items. And credit controls and higher income taxes are expected to slow the demand for new cars.

Military Programs Grow — Meanwhile, direct military procurement is growing. The Munitions Board estimate of Sept. 11 that 4.1 million tons of steel will be required in the next year for naval vessels, landing craft, rockets and projectiles, aircraft, tanks and similar items is regarded as only a start. The program is expected to grow as military operations expand.

The tank program has been expanded ten-fold since the beginning of the Korean conflict and the Army now plans to buy $669 million worth of new tanks and combat vehicles in the current fiscal year. The President indicates he will ask an additional $500 million for further expansion of the tank program.

Other items in the expanded program include $440 million for ammunition, $226 million for artillery, $110 million for noncombat vehicles and $42 million for light planes for the Army.

Something Must Give—You can expect further substantial increases in the steel tonnages required for military production. Sending more troops to Europe will necessitate more equipment for example. Superimposing large military demands and essential civilian programs on the present unprecedented civilian demand for steel means something must give. That something will include automobiles, appliances, home construction.

How Severe a Pinch—To help determine how great the steel shortage may be, a double-barreled study is underway by the defense agencies.

Last week, the executives of 21 leading steel producing companies were asked by Secretary of Commerce Sawyer what they are prepared to do in the way of increasing steel capacity. About 5 million tons additional capacity is in the works and its completion may be accelerated.

The National Production Authority staff is drawing up a list of all production programs to be given priority status and will attempt estimates of the steel tonnages required for all such programs.

Inventory Control—One of the first orders drafted by the new defense agency will be for the control of inventories of steel, copper and other scarce and critical materials. This will be designed to restrict stocks to a reasonable production float and to prevent frantic buying in excess of current needs.

Industry Meets NPA

Steel executives constituting the industry advisory committee which met with NPA Chief Harrison and Secretary of Commerce Sawyer last week include:

J. T. Whiting, president, Alan Wood; H. G. Batcheller, chairman, Allegheny Ludlum; W. W. Sebald, president, Armco; H. B. Johnson, vice president, Altantic Steel; A. B. Homer, president, Bethlehem; C. L. Huff, Bliss & Laughlin; C. W. Meyers, Colorado Fuel & Iron; J. L. Block, vice president, Inland; C. L. Austin, executive vice president, Jones & Laughlin; Chad Calhoun, vice president, Kaiser;

NEA

FIRST OF A SERIES: In the first of many planning conferences to come government and steel officials began drafting plans to channel steel into defense plants and put the industry on a wartime footing. Shown with Gen. William Henry Harrison, head of the National Production Authority, center, and Commerce Secretary Charles Sawyer, right, is Benjamin F. Fairless, president of U. S. Steel

Robert W. Wolcott, chairman, Lukens; P. W. Dillon, chairman, Northwestern Steel & Wire; E. P. Severns, vice president, Continental; C. M. White, president, Republic; B. F. Fairless, president, U. S. Steel; Frank Purnell, chairman, Youngstown Sheet & Tube; Henry A. Roemer Jr., president, Sharon; J. L. Neudoerfer, vice president, Wheeling; A. C. Adams, president, Pittsburgh Steel; E. T. Weir, chairman, National Steel; W. H. Colvin Jr., president, Crucible.

You're Not Alone

Metalworking is trying everything to get enough steel: Conversion, "cats and dogs," etc.

DON'T feel lonesome if you're not getting the steel you need. You have plenty of company.

Hardly any steel consumer's regular quota of steel is sufficient for the production level he'd like to maintain. Some consumers have been told their September allocations will not be delivered until October and maybe not until November. In the meantime, some of them have only a 20-day supply and they're wondering what they'll do when it's gone.

Manufacturers are trying every method they can think of to get more steel. They are in conversion deals; they are picking up "cats and dogs"; they are advertising "Steel Wanted—Price No Object"; they are asking friends of friends for help. Some have bought steel mills. Others have given up the hope of getting enough steel and are searching for substitutes.

Cry Wolf—A lot of steel consumers have been venting their spleen on the automotive industry; they figure the mills are taking better care of that big consuming group than of any other. What they probably fail to realize is that the automotive steel buyers have as many problems as any one else and that they may be multiplied many times over by their tonnage requirements.

Makers of heating equipment, furnaces, ductwork, etc., are apparently among the hardest pressed steel consumers at the moment what with new building continuing to bulge the seams of all record books and the replacement business likewise booming. Virtually every other user of hot and cold-rolled sheet and strip and galvanized sheets is crying for more and asking his salespeople and wholesale outlets to help "beat the bushes" for steel.

Cry Havoc—A Midwest steel broker was brash enough to advertise steel for sale—ingots, semifinished, finished. You name it, he had it (he thought!). A day after the ad appeared he had more than a hundred telegrams and a table full of mail that will bog his typists down for weeks. He did have steel, but it was gone before he had read even a small fraction of the orders.

In the gray market hot-rolled sheets are still occasionally available at 11 cents a pound. Not an uncommon figure is 15 cents. Cold-rolled sheets have brought 18 cents.

Conversion mill books are loaded.

Steel Production Continues Climb to New Records

AUGUST was the fifth consecutive month in which steel ingot production exceeded 8 million tons. Output for eight months this year is more than 63 million net tons, a record level.

The August production was 8,194,581 tons of ingots and steel for castings, a new record and 22 per cent greater than 1949 August outturn. It was an increase of 125,000 tons over July.

Production to Sept. 1, totaling 63,372,602 tons, was nearly 4,875,000 tons higher than the output during the comparable part of last year.

Period 1950	—Open-hearth— Net Tons	% Capac.	—Bessemer— Net Tons	% Capac.	—Electric— Net Tons	% Capac.	—Total— Net Tons	% Capac.	Calculated Net Tons Weekly	No. weeks in mo.
Jan.	7,131,519	96.5	379,252	80.6	419,601	71.9	7,930,372	93.9	1,790,152	4.43
Feb.	6,142,178	92.0	255,565	60.2	395,502	75.0	6,793,245	89.1	1,698,311	4.00
Mar.	6,747,680	91.3	265,726	56.5	473,630	81.1	7,487,036	88.7	1,690,076	4.43
1st Qtr.	20,021,377	93.3	900,543	65.9	1,288,733	76.0	22,210,653	90.6	1,727,111	12.86
Apr.	7,314,733	102.2	407,909	89.5	490,030	86.7	8,212,672	100.4	1,914,376	4.29
May	7,597,837	102.8	437,006	92.9	517,044	88.6	8,551,887	101.3	1,930,449	4.43
June	7,218,570	100.9	406,944	89.3	506,001	89.5	8,131,515	99.4	1,895,458	4.29
2nd Qtr.	22,131,140	102.0	1,251,859	90.6	1,513,075	88.2	24,896,074	100.4	1,913,611	13.01
1st Half	42,152,517	97.7	2,152,402	78.3	2,801,808	82.2	47,106,727	95.5	1,820,902	25.87
*July	7,220,214	96.9	380,317	79.8	470,763	78.4	8,071,294	94.7	1,826,085	4.42
†Aug.	7,295,936	97.7	405,118	84.8	493,527	82.0	8,194,581	95.9	1,849,793	4.43

Note—The percentages of capacity operated in the first 6 months are calculated on weekly capacities of 1,668,287 net tons open hearth, 106,195 net tons bessemer and 131,786 net tons electric ingots and steel for castings, total 1,906,268 net tons; based on annual capacities as of January 1, 1950 as follows: Open hearth 86,984,490 net tons, bessemer 5,537,000 net tons, electric 6,871,310 net tons, total 99,392,800 net tons. Beginning July 1, 1950, the percentages of capacity operated are calculated on weekly capacities of 1,685,059 net tons open hearth, 107,806 net tons bessemer and 135,856 net tons electric ingots and steel for castings, total 1,928,721 net tons; based on annual capacities as of July 1, 1950, as follows: Open hearth 87,858,990 net tons, bessemer 5,621,000 net tons, electric 7,083,510 net tons, total 100,563,500 net tons.
* Revised. † Preliminary figures, subject to revision.

Leaner Alloys Coming

Steel companies are carefully examining all alloy steel orders

IF YOU'RE an alloy steel user be prepared to see whether or not you can make substitutions. Shortages of alloying materials, particularly nickel, are making high alloy steels increasingly difficult to obtain.

Since there are not enough of all the high alloy steels to go around, steel companies are carefully examining all orders for alloy. One producer, for instance, is checking all orders for steel containing over 1.5 per cent nickel to see if the consumer can use some other steel as a substitute. Other mills are returning orders for nickel alloy steels where the end use is nondefense.

Even orders for some chrome grades are being turned down when they are not for defense uses.

NE Steels Again—A very heavy resort to substitutes would bring back into prominence the National Emergency (NE) steels that were developed during World War II to help overcome the stringency in the supply of alloy steels. NE steels had lower and different alloy contents than the regular alloy grades.

The current stringency in nickel-bearing steel developed from the reduction July 1 in customer allotments of nickel by International Nickel Co. of Canada Ltd., the biggest supplier of nickel. International Nickel made no public announcement of the reason for its rationing but rumors are persistent that the company must catch up on its commitments for the United States stockpile of critical materials.

Nickel, Nickel—One cause of the nickel shortage undoubtedly is the high rate of alloy steel production and consumption. While nickel is not used in all alloy steels the increase in alloy steel production includes those alloys containing nickel. In the first seven months of 1950 alloy steel ingot production totaled 4,690,239 net tons only slightly less than the 4,781,657 tons turned out in the first nine months of last year.

Defense Directory

"OLD LINE," government agencies are handling the nation's rearmament problems.

National Security Resource Board's W. Stuart Symington will co-ordinate all defense efforts.

Commerce Department's National Production Authority, headed by Gen. William Henry Harrison, will administer the priority, allocation

and inventory controls delegated to Commerce. Secretary Sawyer will set up an interagency advisory committee to advise NPA on policy.

Interior Department's responsibility for fixing priorities and allocations of fuels and energy will be handled by a Minerals & Energy Administration.

Interstate Commerce Commission's task is dealing with domestic transportation excepting aviation and coastwise, intercoastal and overseas shipping. James K. Knudson, now heading ICC's Bureau of Service, has the job.

Labor Department's Secretary Tobin will work on manpower problems. He'll confer with Defense and the director of selective service on deferment policies for the armed forces.

Federal Reserve Board's loans to expedite production and deliveries of defense items will be backed by Army, Navy, Air Force, GSA and the Commerce, Interior and Agriculture departments. FRB will exercise credit controls over consumers.

NEA

HARDWARE IN THE KITCHEN: With the aid of a .50 caliber machine gun this Army private protects his field kitchen. This scene shows graphically the extent to which steel and nonferrous metals are needed in war. In the background are alloy steel ovens, aluminum cooking pots and other metallic utensils. In the foreground beside the machine gun is copper-jacketed ammunition

Sustained Demand for Machine Tools Ahead

An allout war emergency would find machine tool and industrial equipment better prepared than last time. A big boom would come sooner than in World War II

ALTHOUGH there is nothing in sight right now that makes it look as if a World-War-II boom is due in machine tools and industrial equipment, the months just ahead will show a sustained improvement in the demand for such items. Boil down what you can find in the rearmament cauldron and that's what you will find.

Asked by STEEL what the prospect for purchases of the equipment was, informed government officials answered substantially this way:

Number and variety—they'll result from needs implicit in contracts for military end-products. Timing—placing of orders will occur after (in some cases months after) military contracts have been let and then only after contractors have had time to engineer the products to be made and plan their tooling layouts.

Re-echoing Boom—All figuring, of course, would be erased if there is an all-out war emergency. None of the current procurement, actual and contemplated, is for filling the needs of an all-out war. But if the emergency pops up, STEEL's informants say, there would be a loud and crackling boom. They say the boom experience of World War II in machine tools and industrial equipment would be re-echoed.

If an emergency comes again, the country will be ahead of the game this time: The "phantom order" program will activate production of about 100,000 machine tools on "M-day," and a machine tool-industrial equipment boom would be touched off sooner than it was in the last war.

Forehanded, Forearmed — Because of the phantom forehandedness, the peak of demand for a World War III would come in the first year of the war instead of the second year as in World War II. In 1941 orders for machine tools for war production came to 160,000 units; in 1942 the orders numbered 250,000 units.

Not all orders would be for new equipment, though. Some would be for the reconditioning of much of the equipment in the military reserves. A good deal of that equipment will have to be rebuilt. The armed services don't want to be caught napping for lack of proper equipment so they took inventories that describe machines in storage, tell the condition, and state where the equipment is located.

A Survey Reveals—Equipment in the reserves of the Army, Navy and Air Force numbers about 126,000 items. The National Industrial Equipment Reserve, kept by the General Services Administration, has another 10,000 items. Breakdown of the 136,000 total shows that about 70,000 items are standard, general-purpose tools and that 66,000 include presses, forging units, heating and heat-treating furnaces, various types of materials handling equipment and some special, hard-to-come-by machinery.

Strike Halts Aluminum Output

Aluminum production at the new Point Comfort reduction plant of Aluminum Co. of America has been halted since Aug. 30 by a strike. Company offered the local USA-CIO an increase of 10 cents an hour, plus an additional 5 cents in certain jobs.

Export Controls Reimposed

Export controls on 39 classifications of iron and steel products will be reimposed effective Sept. 30 to all countries except Canada. Exporters seeking to ship iron and steel products to foreign countries must apply for export licenses. The controls were removed last March when domestic supplies were relatively free.

MHI To Poll Industry

Material handling equipment makers soon will receive questionnaires from the Material Handling Institute

seeking information on dollar sales volume for 1948, 1949 and by months in 1950.

The hurry-up statistical study is being undertaken on advice by the Department of Commerce that such information will be necessary to back up claims for materials before the new National Production Authority. Both members and nonmembers of the institute will be polled.

Manufacturers also will be asked to supply some data on the number of units of handling equipment sold. Manufacturers who do not supply the institute with the data requested will be questioned by the Bureau of Census.

The Material Handling Institute members conferred with Commerce Department officials at a meeting in Washington Sept. 13. The institute will organize an industry advisory committee to work with government agencies on the military preparedness program.

Eye to the Future: Ore Boat Building Now

Ordering of six new boats reflects expansion of the nation's steel capacity and belief that Lake Superior region will supply ore needs for a long time to come

THERE are great doings on the Great Lakes these days. For the first time since World War II there is substantial ordering of ore boats. Ordering of just one such boat is no paltry matter, what with the price tag marked something like $5 million.

But now there is not just one boat on order but six: Five ore boats and one limestone carrier. And inquiries are being made for the possible construction of additional vessels.

Wave of the Future—Significance of these orders is not limited only to their monetary value. They are evidence, say some observers, that the Lake Superior region will for a long time provide iron ore and possibly taconite on a commercial basis for the nation's iron and steel industry. Reports of the running out of good ores in the Lake Superior area have given birth to a popular belief that the country soon would be depending on foreign ore that would come in by ocean vessels, with a resultant decline in importance of the Great Lakes ore fleet. But the purchase of six new lakes boats at about $5 million apiece and the long life that can be expected out of them do not indicate their buyers see an immediate and great folding up of the lakes ore trade.

Six Giants — Ordering of the six new boats, all giants, also reflects expansion of the nation's steelmaking capacity. From 95.5 million net tons in 1945 it grew to 100,563,500 tons on July 1, 1950, and it is still getting bigger. It was inevitable that a growth in steelmaking capacity would require an expansion in the Great Lakes ore fleet's carrying capacity.

At present the U. S. is producing steel at the rate of 11 millions tons more a year than it was required to turn out in 1944, the biggest steel production year in World War II, yet the Great Lakes ore vessel capacity in commission is 10 per cent less than it was then. Now in commission are 2,622,750 tons, compared with 2,940,090 tons in September, 1944.

Save by Spending—Also a factor in bringing out the orders for the new boats is operating economy. With inflation still on the loose, vessel operators have seen their operating costs mount. One way to counteract this, they have reasoned, is to use the most efficient equipment possible. In many cases they have remodeled old boats. Now this is being supplemented by purchase of new vessels with the most efficient equipment yet devised and with big capacities.

While the Korean war may have had some influence in the decisions to order the boats it could have been only on long-range thinking, for the boats will not be available until the 1952 shipping season.

The Order List—Boats on order are: Three ore vessels for Pittsburgh Steamship Co., a subsidiary of United States Steel Corp.; one limestone-carrying vessel for Bradley Transportation Co., another subsidiary of U. S. Steel; one ore vessel for Interlake Steamship Co.; and one ore vessel for Cleveland-Cliffs Steamship Co.

Each of the three ore boats for Pittsburgh Steamship will be 647 feet long and have a cargo capacity of 18,000 gross tons. Two of them will be built at Lorain, O., by American Ship Building Co., and the third will be constructed at River Rouge, Mich., by Great Lakes Engineering Works.

The limestone boat for Bradley will be built by the Manitowoc Shipbuilding Co., Manitowoc, Wis., and will be 603 feet long and have a capacity of 20,000 gross tons.

Interlake's new boat, which will be 647 feet long and carry 18,000 gross tons of ore, will come from Great Lakes Engineering Works at River Rouge, Mich.

The new boat for Cleveland-Cliffs will be 647 feet long, will have a capacity of around 19,000 gross tons, and will be built at Lorain, O., by American Ship Building Co.

One and Only — Only one Great Lakes ore boat has been built since World War II. It is the Wilfred Sykes, which was put into operation this shipping season by Inland Steel Co. It was built by American Ship-Building at Lorain.

Construction of the six vessels will add an additional load to the already heavy and record-breaking demand on the nation's steel supply. Around 7000 tons of steel are required for building the hull of one of these lake giants.

Rail Ore Tariffs Cut

Anticipating a substantial increase in rail movement of iron ore from Atlantic ports to mid-western blast furnaces, steel producers and eastern railroads have negotiated a downward adjustment in rail rates from Baltimore and Philadelphia to Pittsburgh, Wheeling, Youngstown, Cleveland, and other consuming points.

New rates become effective Oct. 9, barring Interstate Commerce Commission suspension. Reductions range from 28 to 68 cents a gross ton, as follows:

To:	Present —Per Gross Ton—	Proposed —Per Gross Ton—
Pittsburgh district	$2.79	$2.51
Monessen, Donora	2.79	2.41
Johnstown	2.62	2.31
Neville Island, Butler, Midland, Aliquippa	2.79	2.61
Steubenville, Weirton, and Wheeling	3.34	2.66
Erie, Sharon, Warren, and Youngstown	2.79	2.71
Canton, Cleveland, Lorain, Massillon	3.52	2.91
Buffalo	2.79	2.71

Competition among the railroads is keen for hauling ore inland. Baltimore & Ohio has announced plans for a $5 million iron ore pier at Baltimore. The Western Maryland is improving its Baltimore dock facilities. The Pennsylvania plans to build an $8 million dock at Philadelphia.

Nine New Barges for J. & L.

Nine new coal barges for Jones & Laughlin Steel Corp., Pittsburgh, are being constructed by Dravo Corp. at its Neville Island shipyard, Pitts-

burgh. The vessels, 175 feet long and 26 feet wide, will transport coal from mines to mills.

In the design stage at Dravo's Neville Island shipyard are two new 108-foot modern towboats J. & L. will use in the Pittsburgh district coal trade. These towboats are among six Dravo is building for service in transporting coal.

Welin Davit & Boat Building All-Steel Hull Cruisers

SPLIT PLANKING is one worry a deep sea fisherman need not worry about if he goes down to the sea in a boat with an all-steel hull. Nor need he fear fire, dry rot or wood-boring worms, says Welin Davit & Boat Division, now building a 26-foot sports cruiser with an all-steel hull at its Perth Amboy, N. J., plant.

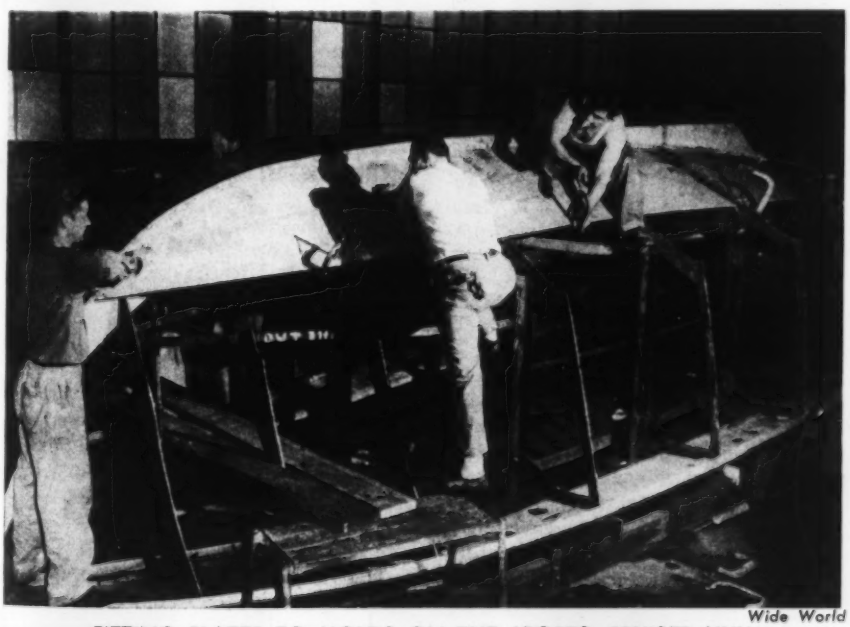
Only Damage: Dents—Welin Davit manufactures power boats and life-saving equipment and other marine accessories. At its Perth Amboy plant and another in San Francisco it specializes in alloy fabrication. The hull of the new cruiser is of 12-gage copper-bearing alloy steel. It is hot-dip galvanized to eliminate rust. To reassure fishermen in southern and western waters where submerged objects are a serious hazard, the company points out that in puncture-proof tests made on the hull, .38 caliber bullets were fired into it at point-blank range. The only damage was dents.

The Conveniences of Home — Cabins of the cruiser which is made in two models—Family Sedan and Flying Bridge—have full accommodations: A dinette that converts into a foam-rubber mattressed double berth, a stainless steel sink, a refrigerator, a fresh-water tank and an enclosed toilet. The boat is not quite a metalworking man's dream. Its cabin is mahogany.

Wide World

STEEL ENGINE STRINGERS
. . . door frames of rust-proof steel

In construction of the hull, plates are fitted to the boat mold and bolted up. The molds are then riveted, making the hull a monocoque type of construction. The power plant of the boat is a hydraulically controlled 100-horsepower marine engine. The boat has a 17.94-mile-per-hour speed.



Wide World

FITTING PLATES TO MOLDS ON THE SPORTS CRUISER HULL
. . . rivets give it a monocoque type of construction

Ready To Push Over Goal

Washington Steel Corp. already achieved its theoretical capacity goal on Sendzimir mill

PRODUCING mostly 36-inch wide sheets in gage range of .010 to .037 inch, Washington Steel Corp. has achieved the theoretical capacity goal of 1500 tons monthly of stainless at its 36-inch Sendzimir mill at Washington, Pa.

Plans in the Mill—The company is planning to more than double its capacity for annealing and pickling later this year when it installs another line. Its new furnace will be about 50 feet long and is expected to anneal stainless strip at the rate of 12 to 100 feet per minute, depending on the gage and size. The new pickler will be over 120 feet long.

Washington Steel officials are also thinking about installing a Wheelabrator centrifugal shot blast descaling unit just in front of the pickler.

Sound Signal at Tube Top — A unique system for accurately controlling the strength of nitric acid solution in the pickling line, without the use of measuring gages, was placed in operation not so very long ago.

It will be utilized for accurate control of nitric and hydrofluoric acid in the new pickling line. The system is operated by gravity flow of the nitric acid from present storage tank of 13,000-gallon capacity into a metering tank of desired capacity to give increment additions of 1 per cent nitric acid to the operating pickling tanks. The filling of the metering tank is automatically signaled by installation of a polyethylene float rod of 1-inch diameter and of suitable length (4 feet) to support a stainless steel rod that is attached to it.

Depending upon the position of the head of acid in the storage tank, the float rises and falls in a perpendicular tube of 1½-inch diameter, the end of which is higher than the main storage tank. When the metering tank is filled, the float rises to top of tube and sets off a sound signal.

Turn on the Acid — To make a nitric acid addition to the pickling tanks, the operator turns the valve from the storage tank and waits until the metering tank is completely filled.

Upon closing the valve from the storage tank, he then opens the valve leading to tank system and opens valve leading into the pickling tank requiring the acid addition. The latter valves are, of course,

closed when metering tank is emptied and process repeated for further additions of acid.

Kropp Increases Force

Rapid increase in backlogs of unfilled orders made a second shift necessary

KROPP FORGE Co., Chicago, says it started a second shift to expedite delivery of critical forgings for light and heavy tanks, jet aircraft engines, gun barrels and other defense items.

Roy A. Kropp, company president, says the move was necessary because of the firm's rapid increase in its backlog of unfilled orders. They now are worth over $5 million and are equivalent to about 80 per cent of Kropp's normal annual peacetime sales volume. Mr. Kropp says shipments for August were the highest for any month since war's end.

The second shift will add about 1150 persons to the Kropp payroll. Part of the war materiel production is being handled by Kropp's wholly owned subsidiary, A. C. Woods & Co., Rockford, Ill. The company is producing landing gear for various types of aircraft, critical tank forgings for the Detroit Tank Arsenal, hubs and shafts for jet propelled planes, terminal pieces for B-36s, hanger brackets for auxiliary aircraft gasoline tanks, rocket launchers for the Navy.

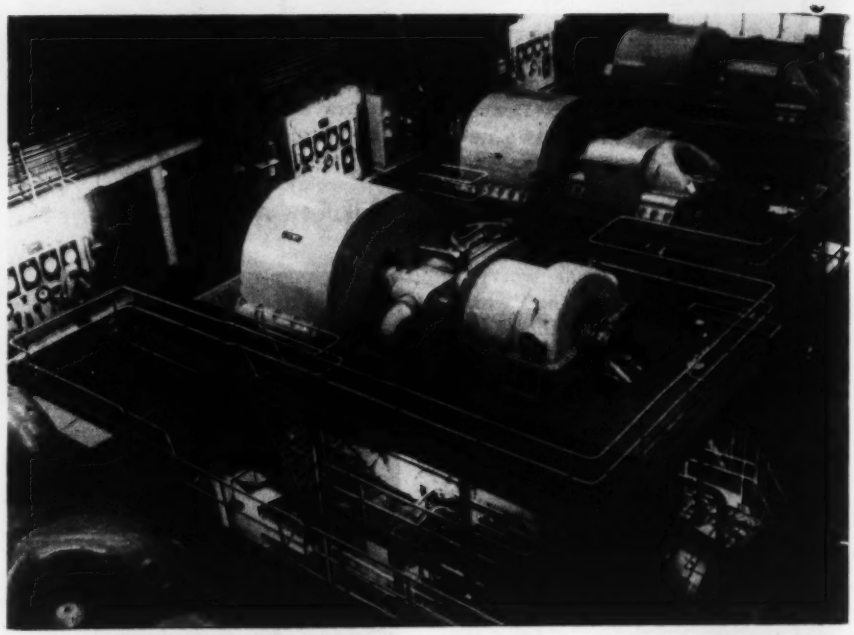
Forging Orders Accelerate

Orders for commercial drop forgings in the first seven months of 1950 increased 87 per cent over the corresponding period of 1949, it was reported at the fall meeting of the Drop Forging Association in Cleveland, Sept. 14-15.

Early this year, new business was running behind 1949 but caught up in June. Orders in July were the largest since March, 1945, with the result that the total of $230 million for the first seven months not only eclipsed the $123 million for the corresponding 1949 period but also the $224 million booked in the entire twelve months of 1949.

Steel is still limiting production of forgings but the industry expects, if called upon, that it can take care of any war requirements.

E. L. Shaner, editor-in-chief of STEEL, said the nation is facing a period of crisis after crisis. As far as the steel industry is concerned, he said, it may find it necessary to accelerate and expand its plans for increasing capacity 5.7 million tons by the end of 1952 to 105.7 million tons.



DE LAVAL-BUILT, DRAVO-INSTALLED: The large blast furnace turbo blower in the foreground was installed by Dravo Corp.'s Machinery Division at Edgar Thomson Works of Carnegie-Illinois Steel Corp. It joined two of the others that the Pittsburgh company placed in operation during the 1943 expansion program at the Thomson Works. The new De Laval machine has a capacity of 121,000 cubic feet of blast air per minute while the other two can each supply 90,000. The turbo blowers are designed for 650-pound steam pressure and 750 degrees Fahrenheit at the throttle

Thompson Spending More

Stepped-up production of aircraft parts by Thompson Products Inc., Cleveland, will require the spending of $3,826,000 for new tools and machinery. The company is operating around the clock six days a week. Thompson's expansion, mostly at the firm's Tapco plant in Euclid, outside Cleveland, required the leasing of 150,000 square feet of additional space from Parker Appliance Co., Cleveland.

Cost-saving machinery, new types of machines to handle the present lines of business, machines to replace worn-out equipment and devices to simplify work were all authorized by Thompson. Cleveland machine tool builders—Ohio Crankshaft Co. is one—are among the major suppliers.

Flexible Tubing To Move

Flexible Tubing Corp. will move into its new 13,000-square foot steel and brick steel plant in Guilford, Conn., Nov. 15. The company, whose plant and offices are now located at Branford, Conn., manufactures Spiratube, a flexible and retractable ventilating and products conveyor. Spiratube was born as a retractable ventilating set-up for the Navy. Through research, Frederick K. Daggett, Flexible Tubing president, and his associates adapted it to many peacetime pursuits, including uses on airplane engines, on farms, in furnaces and in mines.

Reliance Takes Control

Reliance Electric & Engineering Co., Cleveland, bought a controlling interest in Commonwealth Electric Co. Ltd., Welland, Ont. J. W. Corey, president of Reliance, made the announcement. The acquisition involved a cash transaction only. Both companies manufacture electric motors and accessories.

Ohio Piston Buys Equipment

James S. Allan, president of Walker Mfg. Co. of Wisconsin, Racine, Wis., and Deluxe Products Corp., LaPorte, Ind., announced the sale of machinery, tools, patterns and equipment of Deluxe's Piston Division to Ohio Piston Co., Cleveland. Dan P. Shaw, vice president of Ohio Piston, says the machinery and equipment will be shipped to Cleveland and consolidated with existing facilities at the Ohio Piston plant.

The added machinery is expected to increase the company's capacity about 25 per cent. Ohio Piston supplies pistons to manufacturers of automotive, aircraft, industrial, marine, tractor gas and diesel engines.

Adel Changes Name

It becomes effective when the firm consolidates with two other manufacturers

Adel Precision Products Co., long identified as a producer of hydraulic control equipment for industry and aviation, changed its corporate identity to Adel Division, General Metals Corp. William A. DeRidder, head of Adel operations for many years, made the announcement.

The change becomes effective when Adel consolidates with two other manufacturing concerns, Enterprise Engine & Foundry Co., San Francisco, and General Metals Corp. The latter companies have plants in Los Angeles and Oakland, Calif., and Houston. Adel's main plant is at Burbank, Calif. Included in its aviation products line are manual and solenoid-operated selector valves, seat-adjusting cylinders, fuel heater pumps, fluid metering pumps, clips, blocks and line supports. Enterprise manufactures diesel engines for marine and stationary use, various types of process machinery and a line of commercial oil burners. General Metals is known for its foundrywork in producing forgings and castings at its different plants.

Corporate offices of the new consolidation are located in San Francisco.

Capewell Takes Over V-Mac

Capewell Mfg. Co., Hartford, Conn., producer of hack and band saws, hammers, special nails and parachute hardware, acquired V-Mac Industries Inc., Guilford, Conn. V-Mac manufactures pipe threading, cutting and reaming tools. All machinery and production facilities of V-Mac and all of its employees, who are being retained, were moved from Guilford to Hartford. The transfer was completed at the first of this month.

Staunton Williams, president of Capewell, says distribution of the line of pipe tools will be through the existing Capewell sales organization of 13 direct representatives, three sales agents and mill, plumbing, hardware and oil well supply distributors.

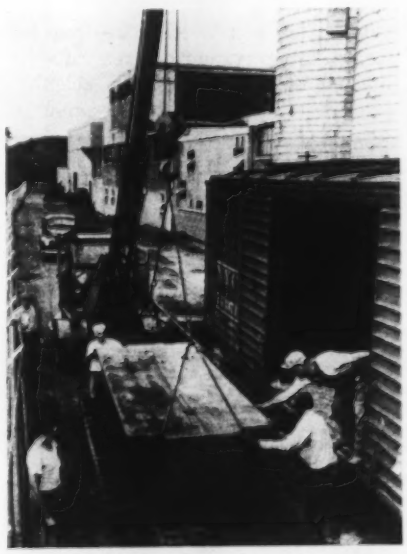
Gen'l Instrument Plans Plant

General Instrument Corp., Newark, N. J., maker of video and radio parts, is planning a Midwest plant. Since about 22 per cent of the company's business is in the Midwest, General Instrument believes on-the-spot operations will increase the business.

To finance construction of the new plant the management will need about $1.5 million to $2.5 million more in working capital. It has filed with the Securities & Exchange Commission statements seeking stockholders' approval of an increase in authorized capitalization from 700,000 shares of common stock to 1.5 million shares.

Spang-Chalfant Installs Tube Mill

When National Supply Co.'s Spang-Chalfant Division installed a new electric resistance weld tube mill at the company's Etna, Pa., plant, production of electrical metallic tubing started to climb. It's still climbing. The new product called "Central" electric metallic tubing completes Spang-Chalfant's line of electrical raceways. EMT, as the product is commonly known, is a light-weight steel tubing that is used in the electrical industry as a metal raceway for carrying wiring and cable. The tubing is electro-galvanized on the outside and has an interior finish of clear enamel. Spang-Chalfant will make EMT in sizes ranging from ½ inch to 2 inches in diameter. It will be shipped from the plant in 10-foot lengths, a standard of the electrical industry.



FIRST ARRIVAL: Atlas Imperial diesel engine patterns arrive at National Supply Co.'s Engine Division at Springfield, O.—first carload of shipments that will include finished parts, castings, tools, jigs, fixtures and other material. Several patterns, received in mid-August, were put to work in furnishing three diesel engines for service in the Philippines. National Supply is working fast to move equpment from Oakland, Calif., old home of Atlas Imperial, to complete consolidation of the two companies (STEEL, Aug. 7, p. 60)

Republic To Build Boiler Plant

Construction of a modern boiler plant that will permit ultimate conversion of two blast furnaces to high top pressure blowing was started by the Youngstown District of Republic Steel Corp., Cleveland. When completed the project will provide facilities for generating 20,000 kilowatts of electric power—enough to take care of the domestic requirements of such cities as Lorain, Mansfield or Steubenville, O., all of which have about 40,000 population. Primary fuel for the new boilers will be blast furnace gas.

Capital outlay for the new plant was not revealed, but the cost is estimated to be about seven times that of the replaced equipment. The plant should be completed within a year. It will have complete coal-handling equipment, including track hopper, double skip hoist, ring type coal crusher (boilers will be equipped to burn as auxiliary fuels either coke or pulverized coal), shuttle conveyor and bins.

Major equipment—two 2-drum boilers rated at 220,000 pounds per hour—will generate steam at 900 pounds pressure and 850 degrees Fahrenheit.

Duotone Back to Jewels, Pivots

Duotone Co., Keyport, N. J., manufacturer of phonograph needles and recording tapes, is back in the business of producing jewel bearings and pivots for instruments. Duotone supplied precision parts for many critical applications in World War II. The firm's initial production will include bearings of sapphire and glass and pivots of steel and nonmagnetic precious metals. Firing pins and other precision parts will be included. Additional floor space is being provided for bearing and pivot production in the company's new plant at Keyport.

Nothing Like a Wax Museum

Looking very much like a gigantic silo or grain elevator is one of the tallest structures ever built of the cantilever construction principle. It is the Research & Development tower of S. C. Johnson & Son Inc. in Racine, Wis. When work is completed on the building, designed by famed architect Frank Lloyd Wright who also designed the company's ultra-modern administration building, it will be a glass-sheathed tower stretching 156 feet into the air. Its 15 stories will be dedicated to research into better wax products for industry, agriculture and home.

Windows of Washington

By E. C. KREUTZBERG *Washington Editor, STEEL*

Bureau of Standards will do scientific development work . . . Government gets deeper into the publishing game . . . Anything can and usually does happen in Washington

ENACTMENT of a new organic law for the National Bureau of Standards gives that organization a virtual carte blanche to handle any problem in scientific development or in basic science for the government. The bureau already has custody of all matters connected with standards. The new law gives it full authority to extend "advisory service to government agencies on scientific and technical problems" and to engage in "the invention and development of devices to serve special needs of the government."

Big Headaches—When the onrushing march of science laid on its doorstep many problems that the bureau had no authority to undertake, bureau officials were given a lot of headaches. That should be changed now. The only headaches the bureau men will have will be in tackling the problems themselves. In the past, many of the outstanding accomplishments of the bureau have had a remote connection, to say the least, with the primary standards responsibilities assigned to it by law. Many of the achievements have had nothing at all to do with standards.

Spelled Out — In the category of things that it achieved that didn't have anything to do with standards are the celebrated radio proximity fuse, the first automatic guided missile (the Navy's "Bat"), the magnetic fluid clutch, and the printing of circuits for conducting electricity in electronic and other devices. Congress has been fully aware of these activities and approved them. In fact, Congress spelled out in many of the annual appropriation bills the authority to engage in some of these activities. Under the new law, the bureau heads can undertake new tasks without wondering if they have authority or not.

Playing the Field — One item for which the bureau has specific authority is on "metallurgical research, including the study of alloy steels and light metal alloys; investigation of foundry practice, casting, rolling and forging; prevention of corrosion of metals and alloys; behavior of bearing metals; and development of standards for metals and sands." Another authorizes "determination of properties of building materials and encouragement of their standardization and use . . . " Still another authorizes the study "of new technical processes and methods of fabrication of materials in which the government has a special interest." Another empowers the bureau to conduct studies "of methods of producing and measuring high and low temperatures; and the behavior of materials at high and low temperatures." Another authorizes "development of chemical analysis and synthesis of materials, and the investigation of the properties of rare substances." And those are just a few.

Deeper in the Publishing Game

The government is going deeper into the technical publishing field: Setting up on a permanent statutory basis an activity that had long been carried on by a Commerce Department order, a new law that has just passed Congress authorizes "dissemination of technological, scientific and engineering information to American business and industry."

OATH OF OFFICE: Albert W. Gatov is shown taking the oath of office as a member of the Federal Maritime Board. He was sworn in by Commerce Secretary Charles Sawyer. Mr. Gatov, president of Pacific American Steamship Association in 1948, has been a leading figure in the shipping industry on the Pacific Coast for many years

Big Business—Because of the increasing amount of technical information developed in government laboratories and private institutions under the government's billion-dollar-a-year research and development program and because of the growing amount of technical information that the government obtains from defense and other contractors under contract terms, there's little doubt that the government will be in the technical publishing business up to its neck.

Right now Commerce's Office of Technical Services has the job of disseminating that kind of information. It is the clearing house for such information gathered or created by other departments and agencies of the federal government. Since it was started in July, 1946, it has grown into a big business: It has available for sale about 150,000 technical documents, covered by a file of a million reference cards.

Shift of Emphasis—On the alert to hand out information adapted to the needs of the moment, OTS continually reviews its materials. Since the outbreak in Korea, it has shifted the emphasis "to the production of things we want or know we will want." That means a lot of the technical information it will be making available to industry over the coming weeks will be obtained from the Defense Department.

To keep up with OTS's available reports it is best to subscribe to the $5-a-year Bibliography of Technical Reports and the 50-cents-a-year Technical Reports Newsletter. Subscriptions can be placed with the Office of Technical Services, Commerce Bldg., Washington 25. OTS makes a specialty of replying to requests for information.

Don't Shake, Don't Break

Factors that have a bearing on the shipment of military materials and supplies so they arrive fully usable at their destination will be considered at the 16th Annual Shock & Vibration Symposium that is to be held at Armour Research Foundation, Technological Center, Chicago, Oct. 18 and 19. This year's program, arranged by the Research & Development Board, Defense Department, is built around the central theme of "Protection of Military Shipments Against Mechanical Impact Shock

and Vibration." The meeting will be open to all interested parties; notification of intention to attend should be made to Dr. Elias Klein, Code 3804, Naval Research Laboratory, Washington 25. Dr. Klein also can help on hotel reservations, if necessary.

The symposium program will break down into these main categories: Use of materials and design features in military supplies that will offer maximum resistance to damage by shock and vibration; types of packaging that are most conducive to protecting goods in transit; and prevention of undue exposure to shocks and vibration during transit on railroads, trucks and ships.

$50 Million Won't Bear Traffic

Approval by Congress of the measure increasing the amount of federal aid to highway construction by $50 million annually is branded insufficient by the American Road Builders' Association, Washington. The association thinks that isn't enough to meet the demands of unprecedented traffic. The act provides federal aid in amount of $500 million annually for the fiscal years ending June 30, 1952 and June 30, 1953. That compares with present aid of $450 million a year. The authorization for the two years provides aid of $1188 million, including $450 million for the primary highway system, $300 million for the secondary highway system, $250 million for the urban system and $188 million for roads and trails in parks and Indian reservations. American Road Builders' Association had been plumping for federal highway aid of a flat $1 billion a year.

District Engineers Assigned

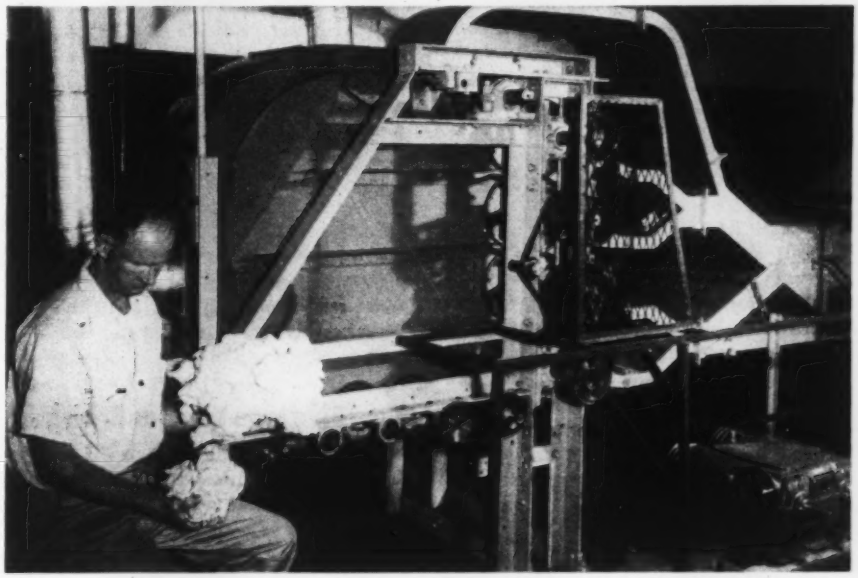
These district engineers were assigned by Army Engineers: To San Francisco, Col. Kenneth M. Moore; to Seattle, Lieut. Col. John P. Buehler; to Rock Island, Ill., Lieut. Col. George A. Finley.

Tariff Talks Will Go On

Since "the invasion of Korea has greatly increased, not lessened, the need for economic strength and unity in the nations of the free world," American participation in the Torquay tariff negotiations will not be called off, says State Secretary Dean Acheson. The opening date, Sept. 28, will see some 40 government representatives in England for the negotiations that will stretch out for two months.

There is no cause for concern by those who fear harm to domestic industry by the tariff talks, a State Department spokesman says: "First the administration has given assurances that no recommendations will be made for a reduction or binding of any U. S. tariff that, in the judgement of the Interdepartmetal Trade Agreements Committee, would be likely to cause serious injury to a domestic industry. Second, if serious injury should, nevertheless be threatened by a concession, it will be possible to withdraw or modify the concession under the "escape" clause to which all Torquay concessions will be subject.

Cotton-Opener Needed in First Cotton-Processing Step



NEW COTTON-OPENING MACHINE DEVELOPED BY AGRICULTURE
. . . engineer compares same weight of cotton before and after fluffing

LOOKING AROUND for something to help diversify your machinery line? Here's a ready-made idea from the Agriculture Department. It's a cotton-opening machine for which you may arrange a license on a royalty-free, nonexclusive basis with the secretary of agriculture.

No Cause for Neps—The need for such a machine became more pressing as mechanical cotton harvesting was more widely adopted. Mechanically picked cotton usually contains more trash than cotton picked by hand; so the textile industry has been seeking a more efficient means of opening, cleaning and fluffing baled cotton. The new machine, developed at the Agriculture Department's Southern Regional Research Laboratory—mainly by Ralph Rusca, a government employee—does the job well and does it fast. It incorporates radically new principles for conditioning the cotton so it will spin easier and clean better. A machine occupying floor space 6 x 9 feet can treat 2000 pounds of cotton per hour. Units can be built in larger sizes.

Despite the high-speed operation, says Dr. G. E. Hilbert, chief, Bureau of Agricultural and Industrial Chemistry, the new machine does not cause neps (small knots of fine fibers), even when processing immature cotton which usually tangles easily.

"Licker-In" & Gin—In contrast to ordinary openers that employ blades or beaters, the new machine consists of a number of toothed, gin-saw or "licker-in" wire cylinders. They are arranged one above the other and all rotate in the same direction. The cotton forms a rapidly revolving soft roll as it feeds into machine on a conveyor belt. Small tufts are pulled out of this roll by the rotating cylinder teeth and are then removed from the teeth by means of new doffing apparatus with metal blades. The metal doffer—usually a toothed revolving cylinder, as in a carding machine, that strips fiber from teeth—is an outstanding feature of the new machine. It appears to have potential use also in cotton gins and other equipment handling short fibrous materials, says Dr. Hilbert.

The machine, says he, meets the need that the textile industry has seen for years in the first step of cotton processing. It is covered by U. S. Patent No. 2,365,793. Complete information about the machine—all its parts and its operating principles—may be obtained from the Southern Regional Research Laboratory, 2100 Robert E. Lee Blvd., New Orleans 19.

Foreign Steel Surplus Drying Up

Preparedness needs of the world superimposed upon heavy civilian demand replaces surplus with order backlogs in Britain and on the continent. Prices rise

DON'T COUNT too heavily on foreign producers to fill the gap the preparedness program may thrust into your steel supply: The steel supply and demand situation abroad is showing signs of becoming as tight as it is in the United States.

From Birmingham, England, comes word that home and overseas inquiries for steel have increased considerably and that there is every indication that steel producing plants will be taxed heavily during the coming winter. Bigger demands in the British home market probably will mean a curtailment of exports, or at least a considerable extension in delivery dates for overseas customers.

No Bargain Prices—With the stiffening of demands for steel, offers of cheap continental steel have disappeared in England. Prices now quoted by French, German and Belgian producers are closely comparable with British quotations.

Germany can't be counted on either as a sure source of steel. Producers there have been so flooded with demand that they no longer can accept substantial orders. With their order backlogs piling up even though all producing capacities are running full blast, producers have greatly reduced the rate of order intake. Rolling mill products on order are equivalent to all the tonnage Western Germany is permitted to make under the Allied ceiling during the next six months.

They Don't Give Up—Americans, nevertheless, continue their attempts to press attractive orders onto the German steel trade. It hurts to have to pass up such alluring business, and so German producers continue to plead with the Allies for an easing in restrictions on steel production.

Export prices for steel from Western Germany are $80 for merchant bars and structurals, $100 for plates, $135 for sheets, and $85 for wire rods.

The upward trend of foreign steel prices has carried Belgian export quotations up to the following levels, f.o.b. Antwerp: Merchant bars, concrete reinforcing bars, and structurals, $74; hot-rolled hoops, $74.50; plates, $81; close annealed sheets, $137; and wire rods, $75.

Poland on New Six-Year Plan

A peek behind the Iron Curtain shows Red-dominated Poland's new six-year plan is more ambitious than its first plan of three years, 1947-1949.

Yearly production targets set for attainment by 1955 are: Iron ore, 3 million metric tons; pig iron, 3.5 million tons; crude steel, 4.6 million ingot tons; rolled steel products, 3.2 million tons; 12,200 machine tools; 11,000 tractors; 25,000 trucks; and 12,000 passenger automobiles.

Record year for crude steel production by Poland, within its prewar frontiers, was 1938 when output reached 1,542,000 metric tons. In 1947, within the existing frontier resulting from the war, the output was 1,579,000 metric tons, and for 1948 the output has been estimated at 1.9 million tons.

Coal Shortage Worries British

Threat of a coal shortage is worrying British industry, and the possibility of importing coal is under discussion.

Coal stocks in Britain are about 1.5 million tons below last year's level, and few industrial firms have been able to put aside any reserves for the winter. The shortage stems from the failure of coal production to keep pace with growing industrial demands of the last year or two. Even though there has been a big increase in the use of oil as a supplanter of coal for industrial fuel there is still an insufficient coal supply.

British pig iron production has been shrinking because of inadequate fuel supplies, but despite this shortage another blast furnace has been lighted on the northeast coast. Other stacks will be put into blast as soon as fuel supplies permit.

The only section of the foundry industry not fully employed is the one that makes light castings; the unemployment results largely from the limited demand from the building trade.

Foundries working for the engineering industry are operating at capacity. Rails and railway equipment are calling for large quantities of iron and steel; agricultural equipment makers also are heavily employed.

Authenticated

HAVANA BOUND: As a result of the British devaluation of the pound sterling, Leyland Motors Ltd., Leyland, Lancashire, England, was placed in a better competitive position with American manufacturers. The firm got an order for 620 busses to replace old streetcars that ply the Havana, Cuba, streets. The $10 million order was placed by Modern Autobus Co., Havana. Leyland Motors is the largest exporter of large commercial vehicles in England. Here you see the front axle assembly line at Leyland

U. S. Is Biggest Customer

The United States was the largest single outlet for pig iron from the Netherlands during the first half of 1950. Of the 108,207 metric tons of iron exported from that country 41,475 tons came to the United States. The United Kingdom took 28,916 tons, and the remaining 37,816 tons were shipped to Western European markets.

Business from Italy

Orders for more than $1 million in steam power plant equipment for Italian utility companies have been received in the last six weeks by Worthington Pump & Machinery Corp., Harrison, N. J.

All of the orders are part of an ECA-financed program to balance the overall source of electric power in Italy. Two postwar years of drought, unparalleled in intensity in the last 50 years, pointed up the need in Italy for steam power plants in a country whose electric power needs are supplied almost entirely by hydroelectric plants.

Worthington also has received orders for more than $600,000 worth of equipment for French power stations in the last three months.

Brazil To Get U. S. Turbines

Worthington Pump & Machinery Corp., Harrison, N. J., is providing a Brazilian company with seven steam turbines to drive a sugar mill. The turbines are being equipped with reduction gears so that the turbines

can be geared directly to the rolls. Steam turbine power has usually been applied to sugar mills through generators and motors.

The sugar mill is being designed and built by Fulton Iron Works Co., St. Louis.

To Have Products Built Abroad

Aetna-Standard Engineering Co., Youngstown, believes most of its products sold in the future in England, France, Italy, Germany and Japan will be manufactured in the country where the business originates.

Lower costs in those countries, import taxes, and currency regulations would allow overseas manufacturing at an advantage over making the same product in an American plant, the company says.

In view of this situation the company has established relations with manufacturing associates in all of those countries and in most instances they will obtain engineering on Aetna-Standard's line of products on a percentage basis. Where a job has some patented design it will be produced in the United States.

Aetna-Standard expects, however, to use its United States plants to produce products sold to Mexican and South American firms.

Team to Study Galvanizing in U.S.

Fifteen specialists from the United Kingdom will arrive in New York this week to study production processes in the American galvanized metals industry. The team is sponsored by the Anglo-American Council of Productivity. It will spend six weeks observing plant operations in Chicago, Cleveland, Youngstown, Buffalo, Philadelphia and the New England area under the technical assistance program of the Economic Cooperation Administration.

MB Revises Stockpile Buying

A revision in stockpile buying that will permit payments above going market prices to domestic producers to stimulate production of highly essential and scarce materials was announced by the Munitions Board.

The new policy authorizes the payment in excess of 25 per cent over the foreign price for domestic materials urgently needed for national security in cases where the U.S. does not normally sell in the world market. The policy removes the former limit of 25 per cent above foreign price which could be paid to domestic producers unable to compete with foreign goods.

BY THE CART LOAD: All the accessories on this cart make it quite plain that the J-35 engine shown here is anything but a simple engine. The removal of the parts is the first step in the jet engine overhaul work that is being increased with the influx of more and more jet aircraft in the Air Force. "Reparable" tags are attached to remain with each accessory until it goes back on the engine at the assembly point

Simple Power Plant Is Not So Simple To Repair

OPERATIONS-WISE a jet engine is a simple power plant. But stripping down and overhauling one — some have as many as 109 parts that are classified as accessories—is another story. Men at the Tinker Air Force Base, Oklahoma City, know; they average 350 overhaul jobs a month. These are some of the things that make the job a difficult one:

A jet's components are never interchanged because of their individuality. Each goes back into the engine from which it came. Reciprocating engines don't present the same problem. Most parts from one engine will work as efficiently in any other engine as the one from which they originally came.

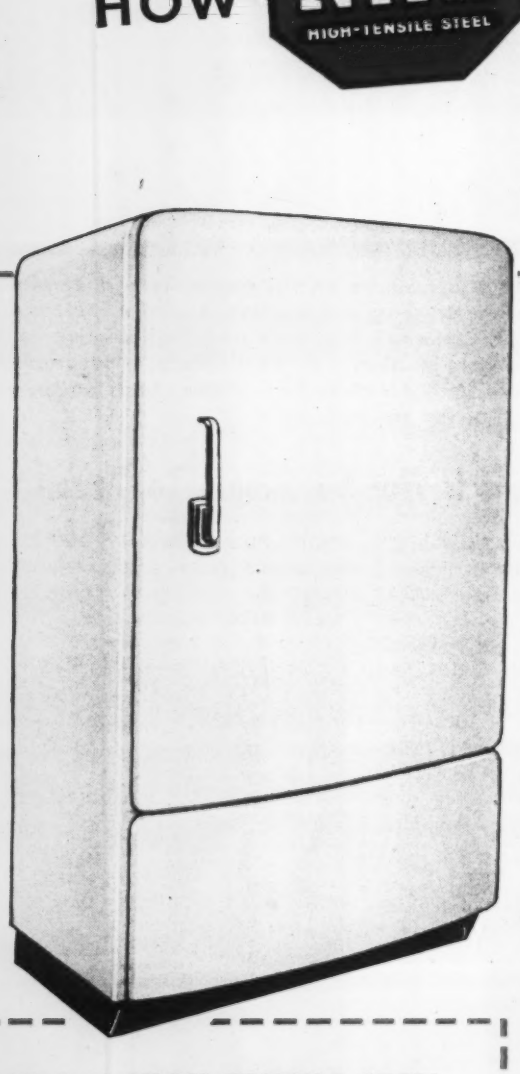
Tiny Cracks, Black Light—Ferrous and nonferrous jet engine parts require separate cleaning processes. Then each is checked for cracks or flaws. A special penetrating fluorescent fluid seeps into the tiniest crack in ferrous material and the flaw is revealed under the eagle eye of the magnaflux. Nonferrous materials get a similar inspection under the black light of the zyglo; internal porosity is exposed by the deep-seeing Sperry reflectoscope.

Rotors that survive the overhaul line at Tinker can take any punishment they will ever get in actual use. Before they are OK'd for re-assembly they must prove themselves in a high speed spin pit. Occasionally the strain proves too great and a rotor flies apart during the test, but 21 layers of armor plate lining the spin pit keep the dangerous flying bits of metal safely confined.

ICE PACK: It requires accurate timing and attention to temperature to separate the stages of a jet engine's compressor rotor. Dry ice, packed into the core of the rotor, contracts it, while the acetylene torch heats the various compressor stages. At the precise moment when the stage expands away from the core, it is lifted off by the jack-operated hoist. The use of dry ice and heat is an old trick with a new application

A Case History for Steel Fabricators

HOW N·A·X HIGH-TENSILE STEEL CUTS COSTS



Refrigerator Manufacturer Found that High Strength Sheet Steel Saved 98c on Each Unit's Cost Over Carbon Steel

A refrigerator company specified N-A-X HIGH-TENSILE steel for its wrapper sheets. The higher strength of this low-alloy sheet resulted in drastic weight savings. Its inherently finer surface texture reduced finishing and painting costs. In addition to manufacturing advantages, N-A-X HIGH-TENSILE steel gives longer life and greater consumer acceptance.

N-A-X HIGH-TENSILE STEEL *effected these economies:*

- 14 lbs. of framing eliminated per unit.
- Faster production rates, fewer man hours in metal finishing department.
- Fewer sanding discs.
- Fewer rejections from paint conveyor line.
- An average of 5% less paint used per unit.

MAKE A TON OF SHEET STEEL GO FARTHER Specify— N·A·X HIGH-TENSILE STEEL

GREAT LAKES STEEL CORPORATION

N-A-X Alloy Division — Ecorse, Detroit 29, Michigan

NATIONAL STEEL CORPORATION

By A. H. ALLEN *Detroit Editor, STEEL*

Mirrors of Motordom

Ford bets $600 million automobile market will continue good through next decade and that company is going to get good share of the business

DETROIT

A $600 million bet on the future of the automobile market through 1960 has been laid on the line by Ford Motor Co. Early this year the economics division of the company completed a detailed study of the probable demand for cars each year for the next ten years, and then estimated the percentage of that demand which Ford might expect to garner. The outlook was good, so the company is now spending well over $300 million for new plants, facilities and equipment, and projects are now under study which will involve another $300 million over the next few years.

These disclosures were made to Detroit's Economic Club last week by E. R. Breech, executive vice president of Ford, who is probably pretty close to tops as a dynamic automotive manager in an industry which is well populated with mental muscle. His optimism over the future is shared by most other automobile brass and it transcends such problems of the moment as inflation, cold wars, hot wars and the like.

Competition from Within — The Ford company of today is a far cry from what it was five years ago. To achieve goals of maximum efficiency, constantly improved quality and maximum competition between its own management groups, the company is now organized on a system of profit centers—businesses within a business so to speak. Under this system every manager of a steel mill, glass plant, power plant or supply division competes. The heads of these separate businesses are given the responsibility and the authority to manage. It is the job of the management of a profit center to deliver the end-product divisions, parts, materials or services of better quality and at lower prices than like materials or services which are purchased outside—and make a profit in so doing. That is Ford's 1950 concept of decentralization.

Capacity Up—Some figures attest the soundness of the planning. In the period 1940-45 average annual output of pig iron at the Rouge plant was 441,680 tons, this year it will be 1,068,000 tons. During the 1940-45 years average annual open-hearth ingot production was 710,646 tons, now it is 1,233,000 tons. Average annual output of electric furnace steel has jumped from 33,589 tons to 158,000 tons. Within the next year, when construction projects now under way are completed, car production capacity will have been increased 50 per cent over prewar levels. The big new pressed steel plant at Buffalo, the large foundry and motor-building project at Cleveland, the transmission plant at Cincinnati, the die casting project at Monroe, Mich., and others still to come reflect Ford's boundless faith in the future of automobiles.

Auto, Truck Output

U. S. and Canada

	1950	1949
January	609,882	445,092
February	505,593	443,734
March	610,678	543,711
April	585,705	569,728
May	721,161	508,101
June	897,864	523,689
Six Months	3,941,883	3,034,055
July	746,771	604,351
August	840,000*	678,092
September		657,073
October		601,021
November		474,731
December		384,318
Total		6,533,641

Weekly Estimates

Week Ended	1950	1949
Aug. 26	179,042	155,367
Sept. 2	188,072	146,039
Sept. 9	149,742	123,806
Sept. 16	190,000	159,493

Estimates by Ward's Automotive Reports

* Preliminary.

We Produce More, Faster — Mr. Breech spoke of the activities of the Anglo-American Council on Productivity, formed two years ago on the initiative of Paul Hoffman, ECA administrator, and Sir Stafford Cripps, British Chancellor of the Exchequer, and of which he was a member. Comprising representatives of management and labor both in the U. S. and the United Kingdom, the council was created to impart to the British anything that American industry might be able to teach them.

Teams were sent here from British industries to study plant administration, organization, layouts, methods and operating procedures, and to report back what their industries have to learn from practices here. Among other things, these teams found that productivity in steel foundries and cotton spinning industries was at least 50 per cent higher than in Britain. They found that forge plants were producing up to four times as many forgings an hour as corresponding plants in Britain. And in the building industries output per man hour on similar site operations was 50 per cent higher in the U. S.

Union Changes Mind on Tie-in— Ford's new supplementary agreement with the UAW-CIO, increasing wage rates, pensions and hooking future wage levels to the government cost-of-living index, places the company squarely in line with General Motors, and Mr. Breech took a little gentle kidding at the luncheon where he was the guest of honor. He passed off the joshing by saying, "If my neighbor's house catches fire and the sparks set fire to my roof, I'm not going to argue about using his bucket." That bucket, incidentally, is being grabbed by dozens of other companies in the automotive and parts industries in current negotiations with unions. The strange part of the matter is that prior to the settlement with General Motors, the UAW went on record as having no more use for the tie-in of rates with the cost-of-living index. In the light of later events, the subsequent decision to accept the formula was a lucky break.

Muntz Plans "Road Jet"

"Madman" Muntz is back in the news with plans divulged in Chicago for building a $5500 sports coupe at a plant in the Windy City. After a spectacular career in the used car business on the West Coast and venture into the television set manufacture, the entrepreneur, Earl W. Muntz, disclosed he will build first models of the car at Glendale, Calif., and will eventually form a corporation to build 1000 cars a year at a

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plant in Chicago, with engines supplied by Cadillac and other parts coming from Ford. The job is to be known as the Road Jet, on 112-inch wheelbase, with Hydra-Matic drive and weighing 2600 pounds. The new corporation will in involve about 20 stockholders, each plunking out $10,000 for shares of stock and a pilot model. A few of the latter are now cruising around Chicago and are of the roadster type on 100-inch wheelbase. Mr. M. vouchsafes the information his car will do 140 miles per hour, although he does not indicate just where such fast travel might be possible.

1951 Models Previewed

"Sneak" previews of 1951 models have been attended by the Detroit press gentry in recent days. Lincoln-Mercury drew back the curtains last Monday, Nash did likewise on Tuesday and Hudson will follow suit Sept. 21, the date on which official announcement of the 1951 Nash lines will be made. Hudson will introduce a new model to be called the Hornet, powered with a new high-compression 6-cylinder engine dubbed the H-145.

This will augment the company's products to four series, including the Super, Pacemaker and Commodore lines. No major changes in body lines are in prospect, although revisions have been made in hoods and front fenders. Hydra-Matic transmissions will be available on two of the 1951 Hudson models.

Ford To Build B-36 Engines

Contract is expected to be signed with Ford by the Air Forces for production of a 28-cylinder radial Pratt & Whitney aircraft engine, for powering the B-36 bomber. The company built a P&W engine during the last war but has largely dismantled the equipment in the building where the job was handled, converting it to an automotive parts and accessories warehouse.

Ford, Buick Pass 1949 Sales

Production of Ford cars and trucks in the first eight months of this year surpassed the total for all of 1949. Through Aug. 31, the company built a total of 1,327,843 units compared with 1,322,254 units for all of last year.

Assembly of cars and trucks for eight months set a 20-year record, topping all years since 1929, when 1,406,322 Model A cars and trucks were produced in the same period. At the same time, assemblies for August totaled 186,951, for the second best record since August, 1929. Output of passenger cars for the eight months totaled 834,303, compared with 540,123 last year, a gain of over 54 cent. Mercury production was 73 cent over a year ago, while truck output totaled 244,465, Lincolns 24,006 and farm tractors 66,452.

Buick sold 53,383 cars last month and total sales for the year now exceed the 377,115 units built last year. The August total marked the fourth time this year that monthly sales have crossed 50,000 and the eight-month output was 46 per cent ahead of last year. Incidentally, the division's production through Aug. 31 was short of sales by about 6500 units.

Addition of "hard top" models to its convertible line has more than doubled the production of Buick convertibles. This year, the company will build about 75,000 convertibles in both the hard-top and soft-top categories, compared with 33,835 last year. Better than 21 per cent of all current unfilled orders are for convertible models. When the "hard top" was introduced early last year, one writer described it as a "car designed for an old man with young ideas."

K-F Builds Ohio Press Plant

Kaiser-Frazer's new pressed steel plant will be located in Shadyside, O., on the Ohio river, costing an estimated $3 million. The site is advantageous for water transport of both steel and finished stampings, although it would call for a long rail or truck haul to Willow Run. Proximity to steel sources undoubtedly will more than offset the cost of shipment of stampings to Michigan.

New Press Ups Output

Combination of a new type of mechanical double-action press with capacity for 12-14 strokes a minute, as against the conventional ten, automatic sheet loading equipment and an "iron hand" device for removal of the finished stamping, has achieved an approximate 35 per cent increase in production of outer door panels at a Detroit pressed steel shop. The press is rated at 750 tons. The inner ram, measuring 70 x 90 inches, starts its stroke at the same instant the outer slide or blankholder descends, but through an arrangement of double shafts and toggle, the two descend at different speeds, the inner ram having less dwell than the blankholder. The press stands a little better than 26 feet from the floor to top of the 75-hp drive motor, and extends nearly 8 feet below floor level to the bottom of the pneumatic cushion.

White Brings Out New Bus

A new diesel line of busses—the White 1100 diesel in large capacity sizes—engineered for low fuel cost and economical maintenance is announced by A. F. McDougald, coach sales manager of White Motor Co., Cleveland.

The new 1100 diesel is powered by a Cummins 4-cycle, 6-cylinder engine which is a product of 30 years of research. The Cummins engine is Model NHHBI-600 with a piston displacement of 743 cubic inches, maximum torque, 530 foot pounds at 12,000 revolutions per minute. It develops 200 horsepower at 2100 rpm.

Trucks Are Used for Everything

Mack Trucks Inc., New York, is celebrating its golden anniversary this year. E. D. Bransome, president of the company, took the occasion to put his thumbs in his vest and remark that every kind of business in the United States, engaged in the production, conversion and distribution of goods uses motor transport.

Citing the latest Census of Manufactures, he says motor trucks are now used by food, tobacco, textile apparel, lumber, furniture, paper, printing, chemicals, petroleum, coal, rubber, leather, stone, clay, glass, metal products, machinery, electrical products, transportation equipment, instruments, motion picture production and other industries.

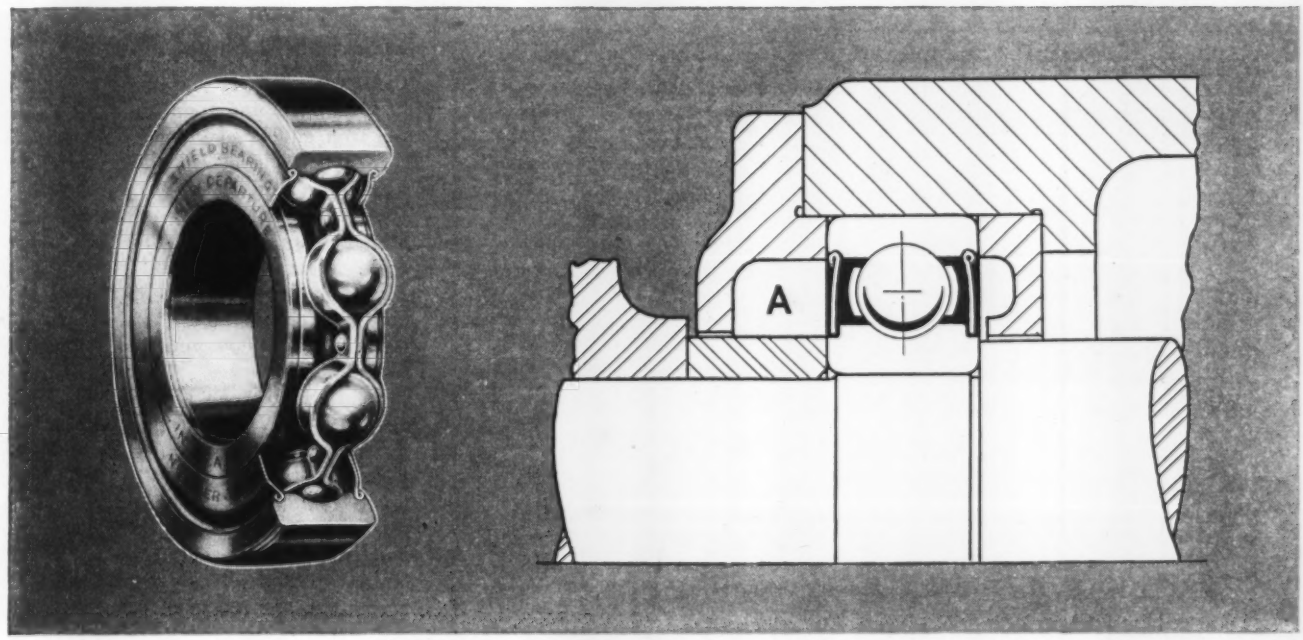
Large fleets of trucks, he adds, are used by all service industries, utilities and other industries.

White Collar Men Get Raises

Since the auto companies were spreading around a great many wage hikes, it seemed only proper that the white collar worker, almost always on the bottom rung of the inflation spiral, should have an adjustment made for the increasing cost of living. Since June 1, the Big Three automakers were doing just that:

General Motors increased salaries from $7.50 to $15.00 per month, according to salaries earned. Ford gave all salaried employees with earnings below $674.99 a cost-of-living increase for the three-month period ending Nov. 30, 1950. That meant a hike of about $14 per month or $42 for the full period. Subsequently such employees will get $5.25 for each 1.4 rise in the cost of living index. They'll get a cut of the same amount for each 1.4 fall in the index. GM and Ford are on the same schedule. Chrysler gave a minimum of 7 per cent increase, or a minimum of $17.50 per month for all employees up to executives.

Long Time No See!



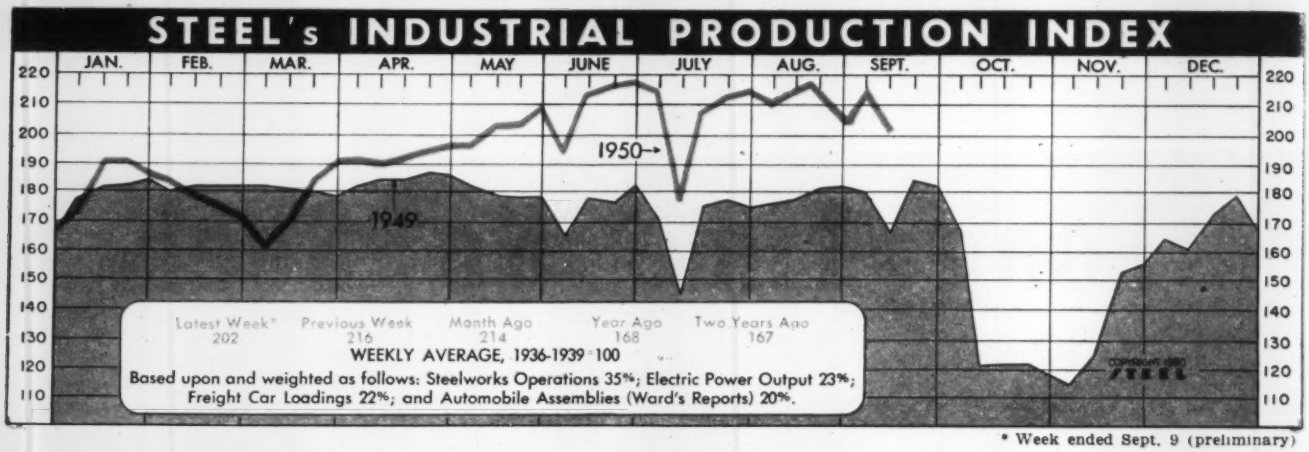
● Most bearing users want bearings that will give them years of dependable service without fussing over lubrication, adjustments, etc.—bearings that can be forgotten for long periods and no harm done.

For instance, take a standard width New Departure ball bearing, shielded on both sides—mount it in general as shown above—fill space "A" full of the recommended grease and under anything like normal conditions that bearing will run sweet and smooth for years without attention of any kind. You can't *over* grease it. It's not undergreased; and in an electric motor for example it's good for any position from horizontal to vertical. Any New Departure representative will be glad to give you details.

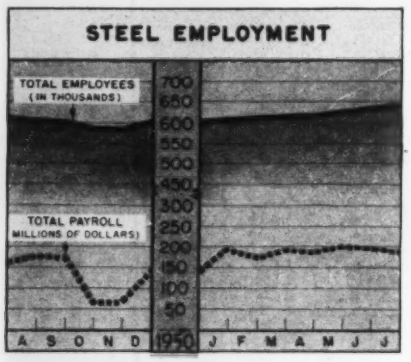
Nothing Rolls Like a Ball

NEW DEPARTURE BALL BEARINGS

NEW DEPARTURE · DIVISION OF GENERAL MOTORS · BRISTOL, CONNECTICUT


STEEL's INDUSTRIAL PRODUCTION INDEX
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
220 210 200 190 180 170 160 150 140 130 120 110
1950→
1949
Latest Week* 202
Previous Week 216
Month Ago 214
Year Ago 168
Two Years Ago 167
WEEKLY AVERAGE, 1936-1939=100
Based upon and weighted as follows: Steelworks Operations 35%; Electric Power Output 23%; Freight Car Loadings 22%; and Automobile Assemblies (Ward's Reports) 20%.
STEEL

* Week ended Sept. 9 (preliminary)

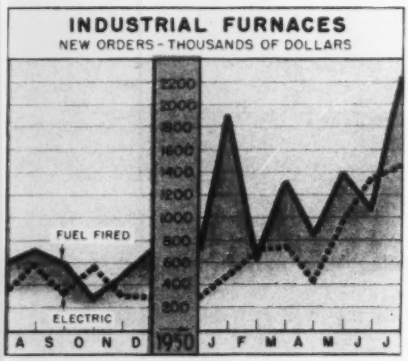

STEEL EMPLOYMENT
TOTAL EMPLOYEES (IN THOUSANDS)
TOTAL PAYROLL MILLIONS OF DOLLARS)
700 650 600 550 500 450 300 250 200 150 100 50
A S O N D 1950 J F M A M J J

Charts—Copyright 1950, STEEL

Steel Employment, Payrolls

	Employees in Thousands		Payrolls in Millions	
	1950	1949	1950	1949
Jan.	609	650	$189.3	$202.1
Feb.	613	653	174.7	189.8
Mar.	616	652	190.0	207.2
Apr.	621	647	186.2	191.9
May	628	637	199.9	188.4
June	636	625	195.3	181.8
July	643	610	188.6	160.3
Aug.	...	603	...	175.6
Sept.	...	600	...	173.5
*Oct.	...	584	...	63.1
*Nov.	...	584	...	63.1
Dec.	...	602	...	136.9

Monthly average. * Averages taken from single figure for the two strike affected months. American Iron & Steel Institute.

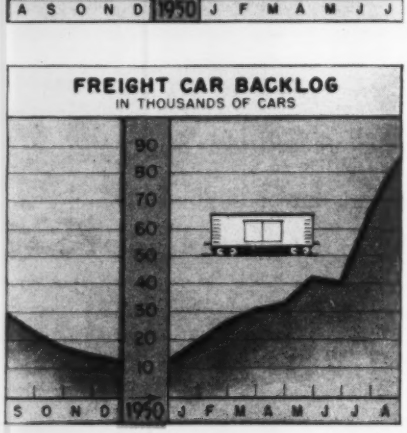

INDUSTRIAL FURNACES
NEW ORDERS - THOUSANDS OF DOLLARS
FUEL FIRED
ELECTRIC
2200 2000 1800 1600 1400 1200 1000 800 600 400 200
A S O N D 1950 J F M A M J J

Industrial Furnaces

New Orders—Thousands of Dollars

	Fuel Fired*		Electric	
	1950	1949	1950	1949
Jan.	1,914	1,047	473	948
Feb.	616	636	697	402
Mar.	1,299	305	753	436
Apr.	837	322	415	543
May	1,392	438	982	762
June	1,047	1,978	1,328	196
July	2,247	594	1,445	329
Aug.	....	706	...	589
Sept.	....	589	...	318
Oct.	....	269	...	565
Nov.	....	464	...	293
Dec.	....	718	...	281

*Except for hot rolling steel. Industrial Furnace Mfrs. Assn.



Freight Car Awards and Backlogs

	Awards		Backlogs*	
	1950	1949	1950	1949
Jan.	9,385	1,663	19,026	96,214
Feb.	9,075	332	26,055	85,974
Mar.	6,201	199	30,539	73,188
Apr.	3,308	30	32,857	52,569
May	11,636	589	42,300	52,281
June	2,195	153	40,585	42,813
July	30,065	408	67,084	36,564
Aug.	24,280	185	86,156	28,731
Sept.	....	123	.....	22,203
Oct.	....	201	.....	17,377
Nov.	....	1,145	.....	14,146
Dec	....	1,220	.....	12,036
Total	....	6,248	*End of month.	

American Railway Car Institute

Issue Dates of Other FACTS and FIGURES Published by STEEL:

Construction Aug.28	Machine Tools Aug.28	Refrigerators Aug.21
Durables Aug.28	Malleable Cast. Aug.28	Steel Castings Aug.21
Fab. Struc. Steel...Sept.4	Price Indexes Sept.4	Steel Forgings Aug.7
Foundry Equip. ...Sept.11	Pump Orders Sept.11	Steel Shipments....Aug.28
Gear Sales Sept.11	Purchasing Power..Sept.4	Trucks, Elec. Ind...Jan.2
Gray Iron Sept.4	Radio, TV Aug.14	Vacuum Cleaners ..Sept.4
Indus. Prod. Sept.11	Ranges, Elec. Aug.28	Washers Sept.11
Ironers Aug.21	Ranges, Gas Sept.4	Water Heaters Sept.11

Steel Hourly Wages Rise

Average hourly earnings of hourly piecework and tonnage workers in the iron and steel industry reached a record high level at $1.744 in July, American Iron & Steel Institute announces. That average was 3 cents higher than in June and 4.5 cents higher than in July, 1949.

Employment in the industry increased during July. The estimated total was 643,000 persons, including salaried employees. That was 7100 more than in June and 33,000 above July, 1949. Wage earners worked an average of 35.5 hours a week in July.

Total estimated payroll of iron and steel companies in the first seven months of 1950 was over $1,324,000,000, the highest ever reached in a similar period and nearly $3 million above the same period last year.

Freight Car Buying Is Active

August was another big month for freight car orders. Last month's total was 24,280 and was the second highest in 26 years. In July 30,065 cars were ordered, many of them at the Association of American Railroads meeting. At that time railroad executives foreseeing mounting defense requirements gave the car building industry a much needed shot in the arm.

Although the backlog reported by the American Railway Car Institute is short of the postwar high it is at the highest level since Feb. 1, 1949. On Sept. 1 it totaled 86,156 cars with car builders' backlogs being 53,685 and railroad shops adding 32,471. A year earlier the backlog was down to 28,731 as the entire car building program nearly came to a halt.

New car deliveries increased substantially in August, climbing to 5203 from 3464 in July. Further large increases in monthly deliveries are unlikely until after some sort of allocation program for steel is put into effect.

The Business Trend

Metalworking's production is due for some shifts but just what the effect will be on individual plants is still a matter of conjecture

ALLOCATIONS and credit controls will play an increasingly important role in metalworking companies' operations in coming months. Watch for shifts from nonessential civilian goods to essential civilian and more military items. Don't expect such action overnight or to be clearly defined at first.

Appliance manufacturers may find their products moving more slowly as credit controls are tightened. But production schedules may suffer no serious disruptions for several months. Appliance demand is still strong.

Because of the holiday STEEL's industrial production index fell 14 points in the week ended Sept. 9 to a preliminary 202 per cent of the 1936-1939 average from 216 a week earlier. Auto assemblies, freight car loadings and electric energy distribution all were lower. Although the decline from the preceding week's figure was fairly sharp the index for the holiday week was well above the 168 recorded in the corresponding week a year ago.

No Drop in Steel Rate . . .

Steelmakers didn't let a holiday interfere with their pouring of ingots and castings. Output rate for ingots and steel for castings was 98.5 per cent of capacity in the week ended Sept. 9. Last week production moved up a little further as operations were at theoretical capacity. Necessary maintenance and repairs are being hurried as much as possible to reduce furnace down time and keep the steel rolling toward ultimate users.

Auto Assemblies Trimmed . . .

Loss of a day's production puts a big dent in the automotive industry's outturn and the week ended Sept. 9 was no exception. With one day less in which to work assemblies dropped to 149,742 from 188,072 in the preceding week. The daily assembly rate was high and will remain so during the rest of this month. September schedules call for a higher daily rate than was maintained in August but the month's total will be lower because of fewer working days. Shortages in parts are a headache to the industry but some of them are being overcome by the resourcefullness for which the industry is famous.

Coal Gap Narrows . . .

Bituminous coal output through Sept. 2 nearly matched that in the same period a year ago. Since the start of the year 320.8 million tons were mined and in the like 1949 period the total was 325.6 million tons. Despite the strike that brought low output in the first quarter full workweeks are rapidly closing the gap with 1949 output. A year ago miners were on a three day week.

Prices Inch Up . . .

Although the rate of climb was lower than in some immediately preceding weeks, wholesale prices continued their upward movement in

BAROMETERS of BUSINESS

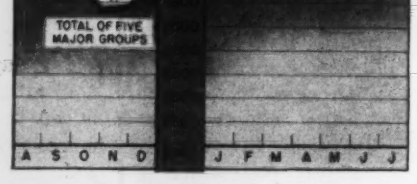
		LATEST PERIOD*	PRIOR WEEK	MONTH AGO	YEAR AGO
INDUSTRY	Steel Ingot Output (per cent of capacity)†	98.5	97.5	99.5	85.0
	Electric Power Distributed (million kilowatt hours)	6,029	6,459	6,253	5,258
	Bituminous Coal Production (daily av.—1000 tons)	1,838	1,817	1,760	1,346
	Petroleum Production (daily av.—1000 bbl)	5,908	5,760	5,674	4,903
	Construction Volume (ENR—Unit $1,000,000)	$256.1	$342.5	$164.0	$146.5
	Automobile and Truck Output (Ward's—number units)	149,742	188,072	182,965	123,806
	*Dates on request. †1950 weekly capacity is 1,926,803 net tons. 1949 weekly capacity was 1,843,516 net tons.				
TRADE	Freight Car Loadings (unit—1000 car)	750†	852	847	624
	Business Failures (Dun & Bradstreet, number)	145	143	194	148
	Money in Circulation (in millions of dollars)‡	$27,259	$27,042	$27,015	$27,589
	Department Store Sales (changes from like wk. a year ago)‡	+5%	+14%	+30%	−5%
	†Preliminary. ‡Federal Reserve Board.				
FINANCE	Bank Clearings (Dun & Bradstreet—millions)	$12,783	$16,132	$13,671	$10,471
	Federal Gross Debt (billions)	$257.8	$257.8	$257.4	$256.4
	Bond Volume, NYSE (millions)	$13.4	$11.8	$19.3	$9.7
	Stocks Sales, NYSE (thousands of shares)	5,855	6,698	9,335	3,201
	Loans and Investments (billions)†	$68.6	$68.2	$67.8	$65.8
	United States Gov't Obligations Held (millions)†	$35,095	$34,894	$35,496	$37,307
	†Member banks, Federal Reserve System.				
PRICES	STEEL's Weighted Finished Steel Price Index††	156.99	156.99	156.99	152.52
	STEEL's Nonferrous Metal Price Index‡	210.6	205.2	197.0	180.3
	All Commodities†	167.5	167.2	165.6	153.3
	Metals and Metal Products†	174.5	174.8	174.9	168.0
	†Bureau of Labor Statistics Index, 1926=100. ‡1936-1939=100. ††1935-1939=100.				

Metalworking Employment

Production Workers—Five Major Groups

1949	Prim. Mtls.	Fab. Prod.	Mach- inery	Elec. Mchy.	Trans. Equip.
July	934	671	939	505	1,014
Aug.	932	688	927	507	998
Sept.	938	708	935	531	1,017
Oct.	559	677	922	548	986
Nov.	737	666	908	546	898
Dec.	955	988	929	558	896
1950					
Jan.	963	693	936	561	978
Feb.	977	699	959	572	872
Mar.	982	709	981	580	879
Apr.	1,007	722	1,003	595	899
May	1,025	742	1,022	605	1,046
June	1,050	769	1,034	614	1,078
July	1,053	767	1,033	626	1,077

Bureau of Labor Statistics



Metalworking Hourly Wages

Production Workers—Five Major Groups

1949	Prim. Mtls.	Fab. Prod.	Mach- inery	Elec. Mchy.	Trans. Equip.
July	159.1	146.6	153.0	144.7	166.1
Aug.	158.1	146.8	153.1	145.1	166.0
Sept.	160.7	147.4	153.8	144.7	167.4
Oct.	155.6	145.9	153.6	143.5	165.6
Nov.	158.0	145.1	153.8	143.5	166.2
Dec.	159.7	147.2	154.3	144.6	168.4
1950					
Jan.	161.5	148.8	154.7	144.3	168.2
Feb.	160.2	148.1	155.2	144.5	167.7
Mar.	160.4	148.0	156.0	144.3	167.8
Apr.	160.9	148.8	156.9	144.6	170.6
May	161.9	149.5	157.6	145.3	169.8
June	163.6	151.4	158.3	145.1	173.0
July	162.5	151.8	158.9	145.7	173.0

Bureau of Labor Statistics

Warm Air Furnaces

Shipments in Units

	1950	1949	1948
Jan.	39,887	31,855	46,558
Feb.	45,618	33,125	36,345
Mar.	59,982	41,376	39,297
Apr.	58,798	34,595	45,597
May	78,349	42,427	55,473
June	98,517	55,857	64,724
July	.....	48,551	57,292
Aug.	.....	84,250	92,011
Sept.	.....	111,582	103,566
Oct.	.....	102,989	107,024
Nov.	.....	78,828	77,498
Dec.	.....	51,766	51,163

Bureau of the Census

Charts—Copyright, 1950, STEEL

the week ended Sept. 5. The latest index is 167.5 per cent of the 1926 average, 1.1 per cent above four weeks earlier and 9.3 per cent above the comparable week in 1949. Bureau of Labor Statistics estimates the monthly index reached 166 in August. A special survey by the bureau brings forth an estimate that retail food prices dipped 1 per cent between Aug. 15 and Aug. 28 and were 1.5 per cent lower on the latter date than they were a month earlier.

Rail Earnings Spurt . . .

Nation's Class I railroads earnings in July were $59 million, more than double the $26 million net income for July, 1949. This brings the net for the first seven months to $269 million, the Association of American Railroads says, against $201 million in the like period a year ago. The improved earnings were achieved despite a 1.5 per cent drop in operating revenues.

Incomes Are High . . .

Personal income in July reached a $219 billion annual rate compared with $217.1 in June. It was higher than in any previous month except in March of this year when veterans' insurance dividends were at a peak. Apart from this extra booster, July personal income was the highest on record. Wage and salary receipts went up slightly in July following marked advances in the two preceding months.

West Works in High Gear

Business booms along but turmoil in evidence before World War II is missing

EVIDENCE of the West Coast's industrial maturity is contained in reports covering operations in the 12 weeks since the outbreak of the Korean war. The business climate is a little boomier than it was before the start of hostilities but that condition exists all over the country. Widespread industrial dislocations and expansions that characterized the period at the beginning of World War II haven't occurred thus far nor are they expected in the immediate future. Rearmament contracts are rare except in the aircraft and ship repair industries.

Material supplies, particularly metals, have tightened just as they have elsewhere. Very little western steel is going into military work but the increased diversion of eastern steel to essential usages is putting a squeeze on western fabricators.

Records Despite Squeeze — Surprisingly, most western fabricators are setting new production records in finished goods and leading manufacturers expect to maintain the present pace at least until yearend. A few small plants have slowed operations because of steel being tight but no shutdowns are reported. None of the larger plants report any slowing in operations.

Another and in many cases a knottier problem for western manufacturers is the freight car shortage. Transportation difficulties have hit an estimated nine out of ten companies and little relief is in sight before the end of November.

Buying by wholesalers remains heavy with reports of more stockpiling coming from almost all fields. Jobbers evidently are trying to build up inventories in anticipation of higher prices on finished goods. Consumer buying is very active but scare buying has leveled off after the early splurge.

Jobs Galore—Employment up and down the West Coast is expanding steadily. In Washington and Oregon unemployment is the lowest in five years and in the latter state an estimated 98 per cent of the working force is employed. California's factory employment is at a postwar high and further gains will come as the aircraft industry expands its operations. Gains in aircraft and shipbuilding are expected to pace expanding durable goods industry output. Steelmaking expansion programs are

underway at Columbia Steel Co., Geneva Steel Co. and at Kaiser Steel's Fontana, Calif., plant.

Aircraft Mobilization Orderly

Mobilization of southern California's aircraft industry is proceeding at a slow but orderly pace. From July 1 to Aug. 15 the four major airframe plants in the Los Angeles area—Douglas, Lockheed, North American, and Northrop—producing 46 per cent of America's military aircraft, added 2837 new workers to payrolls.

Mid-August employment at plants of the four major producers was 61,726. Another 24,653 persons were at work in 210 large and small aircraft parts, equipment and accessory plants, machine shops, and fabricators of aircraft components in Los Angeles county. Employment in all plants and shops is higher and the general increase is expected to reach 10 per cent by the end of the year.

Crosley Appliances in Demand

Refrigerator production at Avco Mfg. Corp.'s Crosley Division climbed from 34,000 per month in December to 65,000 at present and is still increasing. W. A. Blees, Avco vice president, says sales in the first seven months totaled 359,000 Shelvador units, compared with 191,000 in the same period a year ago.

Other Crosley products are also enjoying bigger sales this year. Mr. Blees points out that range and radio sales are three times what they were a year ago, television sales doubled and freezer sales are ten times the 1949 total. Following the company's recent national distributor convention, distributor orders for the 1951 line totaled more than $68 million. "This is the highest in Crosley history," he states, "and represents shipments for August, September and October."

Sylvania Hikes Prices

Radio and television division, Sylvania Electric Products Inc., New York, announced new prices for television and radio sets effective Aug. 31. Increases range between $10 and $30. Most of the leading producers in the industry have announced similar increases in recent weeks. In some instances the increases merely wiped out the reductions announced only a few months ago and in others they represent advances larger than earlier cuts.

Heavy Building Abounds

Monthly contract award average holds big lead over rest of postwar period

VOLUME of heavy engineering construction contract awards remains high. Major difficulties confronting builders and firms embarking on expansion programs are rising prices and shortages of skilled help and materials. Heavy engineering contract awards reported by *Engineering News Record* were unseasonally high in August totaling almost $1165 million.

The eight month aggregate is $8004.9 million and tops the corresponding 1949 total by 46 per cent. Comparison of the monthly average so far this year with averages in other postwar years is shown in the accompanying chart.

Not all heavy engineering projects are included in the above totals. This tabulation shows only the value of the larger projects. Also excluded are small residential awards and maintenance and operation expenditures.

Setting the Pace—Private construction at $4635.8 million is 81 per cent higher than a year ago. Under the overall listing are the following classifications and the increases over the like 1949 period: Mass housing, 116 per cent; commercial building, 68 per cent; unclassified construction (mainly pipelines), 98 per cent; and industrial building, 20 per cent. It is in the last mentioned classification that awards are running counter to predictions made at the start of the year. Industrial building contracts in August totaled $221 million and were the highest for any month this year.

Public construction awards in the January-August period were $3369 million, 15 per cent higher than in the first eight months of 1949. Highway contracts at $889 million are 39 per cent higher, public buildings at $1120 million are 35 per cent higher and bridges at $242 million are up 12 per cent.

Work A-Plenty—A survey made by the Associated General Contractors of America Inc. shows a general scarcity of building machinery and materials, higher prices and pressure for higher wage rates. Construction in large volume is expected for the rest of this year by the association's 5600 member companies.

Materials pinch is universal as 96 per cent of the contractors replying to the association survey reported shortages. Steel took top billing with 65 per cent not getting enough. Cement with 57 per cent and lumber with 36 per cent followed. Most replies stated either increasingly longer delivery dates are being given or no delivery time is promised. A little less than half the contractors report equipment shortages, principally for heavy duty machines. Higher equipment prices were reported by 69 per cent of respondents.

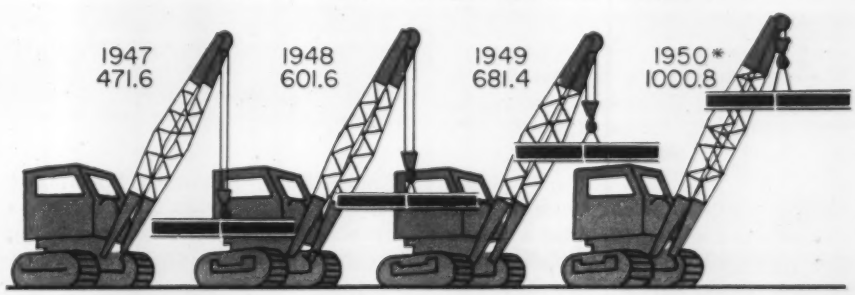
Labor Pinch—Shortages of skilled workmen are hampering 68 per cent of contractors. These shortages tie in closely with pressure for higher wages being experienced by 76 per cent of the firms. Companies who have contracts in effect expect demands for higher wages when these agreements expire.

McKee Keeps Busy

Dollar volume of Arthur G. McKee & Co.'s new work for the year to date is ahead of that for the corresponding period in 1949. Recent large projects for the Cleveland engineering and contracting firm are a complete open-hearth plant for Inland Steel and an integrated iron and steel plant for Empresa Siderugica Nacional de Paz de Rio in Colombia, South America. Negotiations are in progress for other projects of considerable size, the company says.

Engineering Work Goes Up and Up

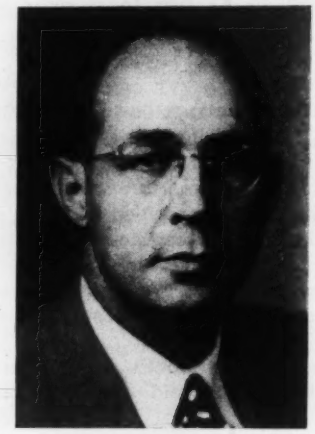
. . . 1950's monthly average tops postwar years



* Average for first eight months.

Men of Industry

CHARLES A. TAYLOR
. . . treasurer, Copperweld Steel



CHARLES O. AYERS
. . . sales promotion mgr., Lull Mfg.

FRED K. KNOHL
. . . chief engineer at Shakeproof Inc.

Charles A. Taylor was elected treasurer, **Copperweld Steel Co.**, Glassport, Pa., filling the vacancy caused by the death of **Millard H. Ronzone.** Mr. Taylor became associated with Copperweld in 1939 as assistant controller, and was appointed controller in 1949.

S. R. Marshall was appointed director of purchases, **Hydraulic Equipment Co.**, Cleveland. Before joining Hydraulic Equipment Mr. Marshall was with Joy Mfg. Co. as purchasing agent, Cleveland division, and with Plymouth Division, Chrysler Corp.

Henry M. Sossaman was appointed general sales manager, **Quaker Rubber Corp.**, division of H. K. Porter Inc., Philadelphia. **Charles E. Dugan** was promoted to assistant general sales manager; **Jack R. Lewis**, assistant sales manager; **T. L. Durkin**, manager of contract sales; **A. M. Lowrey**, Philadelphia district sales manager; and **Benjamin Shawcross**, manager, moulded hose department.

Carl L. Zak, formerly general manager of sales, Pittsburgh Steel Co., has joined **Steel Sales Corp.**, Chicago, as manager, tubing sales, for all ferrous and nonferrous seamless and welded tubing and pipe.

Floyd E. Shaffer was appointed medical director, **Bethlehem Steel Co.**, Bethlehem, Pa., succeeding the late **Dr. Loyal A. Shoudy.**

Bell & Howell Co., Chicago, announces that **Allen M. Adams** joined the organization as director of purchases. Since 1946 he was in charge of purchasing, Crosley Motors Inc.

Charles O. Ayers was appointed sales promotion manager, **Lull Mfg. Co.**, Minneapolis. In sales and promotional activities for many years, he had former association with Universal Steam Equipment Co. and Joesting & Schilling Co.

Johnson Steel & Wire Co., Worcester, Mass., elected **Joseph F. Timmerman Jr.** vice president in charge of sales. He formerly was assistant manager of sales, Detroit district, Detroit Steel Corp., and had previous association with Portsmouth Steel Co. and Keystone Steel & Wire Co. **Robert E. Lauterbach** resigned as treasurer to accept a position as assistant to the treasurer and to the secretary, Pittsburgh Steel Co., parent company of Johnson Steel & Wire. **Gerald R. McClure** was named to succeed Mr. Lauterbach, and **James S. Howard** was elected assistant treasurer, succeeding Mr. McClure in that office.

E. W. Bliss Co.'s Rolling Mill Division, Salem, O., appointed **William G. McClain** as sales engineer. Formerly associated with Republic, Inland, Wheeling and Bethlehem Steel companies, his latest connection was with Furnace Engineers Inc., Pittsburgh, as sales engineer.

James J. Hagan was appointed assistant plant manager, **Weston Electrical Instrument Corp.**, Newark, N. J.

Walter S. J. Swanson, Washington public relations man and trade association executive, was appointed an assistant to **Edwin C. Barringer,** executive vice president, **Institute of Scrap Iron & Steel Inc.**, Washington.

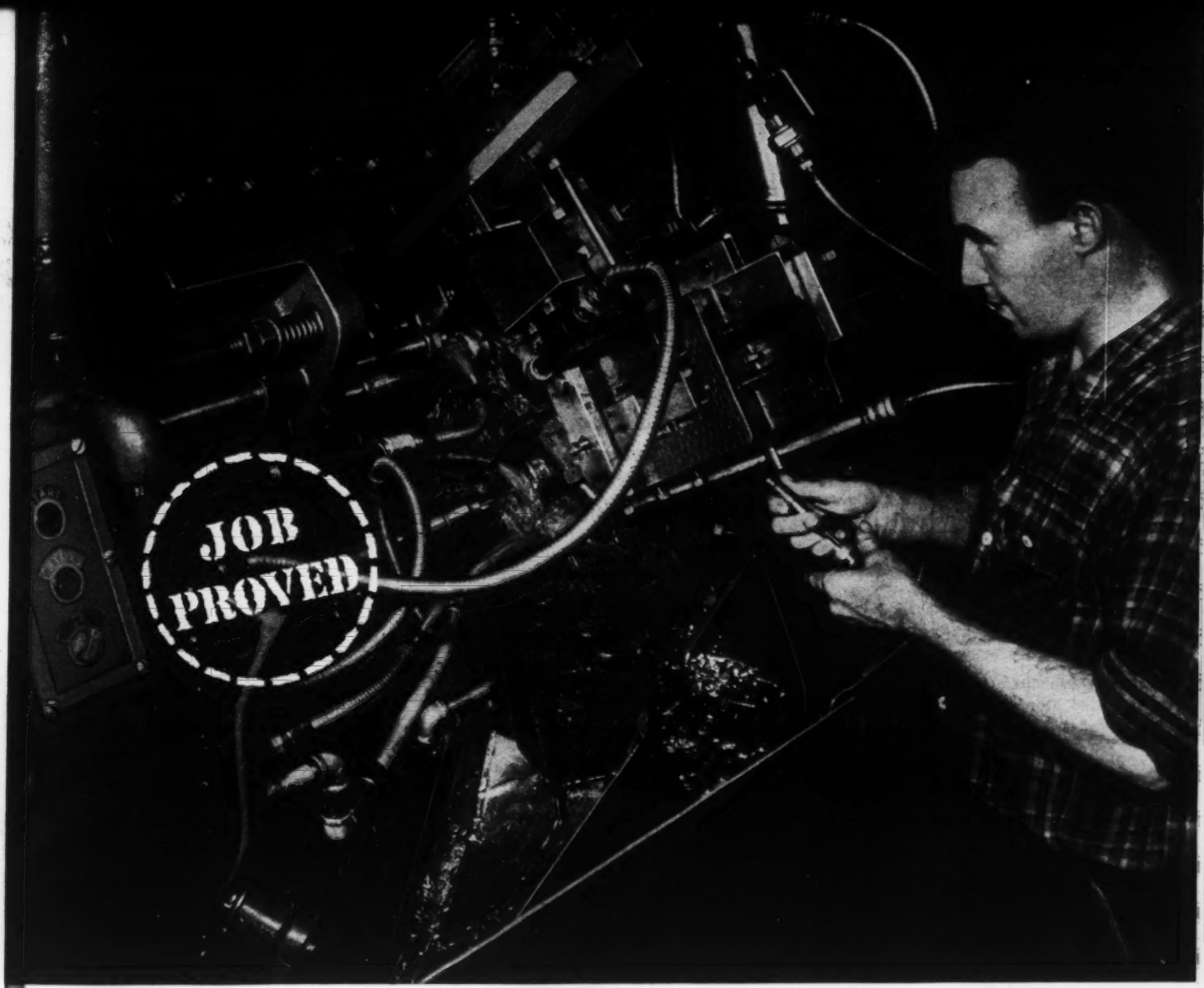
Shakeproof Inc., Chicago, appointed **Fred K. Knohl,** formerly in charge of field engineering, as chief engineer. He will supervise all design modifications of standard fastener products, special stampings and screw products. **Kenneth C. MacKay,** recently sales analyst and director of sales training program, was named budgetary control manager. In the company's Elgin, Ill., plant, **Elbert Faust** was named assistant works manager, and is succeeded as production superintendent by **Henry Archer.**

B. L. Bethel, for 25 years a purchasing executive in electronics and related industries, was named vice president-purchasing for **John Meck Industries,** Plymouth, Ind.

E. Claude Jeter was appointed manager of **Ford Motor Co.'s** new production foundry under construction in Cleveland. **Harry G. McMurray** was appointed manager, Dearborn Iron Foundry, formerly known as the Rouge production foundry, and in that position succeeds Mr. Jeter, former plant manager. The managers of each foundry will function under **Charles H. Patterson,** production manager, automotive manufacturing operations.

Elmer W. Krueger, operations manager, **Cleveland Pneumatic Tool Co.**, Cleveland, was elected to the board of directors.

Gunnison Homes Inc., U. S. Steel Corp. subsidiary at New Albany, Ind., elected **Chilton K. Ross** as comptroller. He has been district audit supervisor, U. S. Steel Corp. of Delaware, since 1946, with headquarters



SUNICUT DELIVERS UNEXPECTED BENEFITS

Action Taken To Improve Working Conditions Results in Better Finishes, Longer Tool Life

A cutting oil that "fogs" excessively is annoying to operators. Droplets form and drip from overhead. So when this occurred three years ago in a large metalworking plant, the owner lost no time in taking action.

Accepting the advice of a Sun representative, he tried a "Job Proved" Sunicut oil. This ended the annoyance. It did far more besides. Being transparent, Sunicut made it easier for the operators to take micrometer readings on the work. It improved finishes remarkably and increased tool life 25 percent. Recently a switch was made to *new* Sunicut with Petrofac—and results have been even better.

The new Sunicut grades are giving outstanding performance throughout the metalworking industry. They are transparent, nonemulsifying oils with superior metalwetting, antiweld and extreme pressure qualities. For more information write for folder S-9.

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SUN PETROLEUM PRODUCTS
"JOB PROVED" IN EVERY INDUSTRY

SUNOCO®

in Chicago. **Victor Fedosky** was appointed assistant manager of the Ambridge, Pa., plant of U. S. Steel's **American Bridge Co.** He was assistant to plant manager at the company's Gary, Ind., plant.

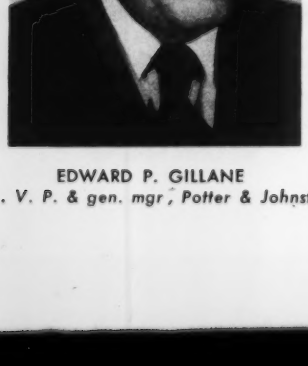
Elmer J. Malchow, formerly with Western Washer & Stamping Co., has joined **Claude C. Slate Co.,** Los Angeles, as shop superintendent.

Cyrus Eaton was re-elected chairman of the board, **Steep Rock Iron Mines Ltd.,** Steep Rock Lake, Ont., Canada, and **M. S. Fotheringham** was elected president. Mr. Eaton has been chairman since 1943, while Mr. Fotheringham, who succeeds the late **Gen. D. M. Hogarth,** has been with the organization since its inception in 1939.

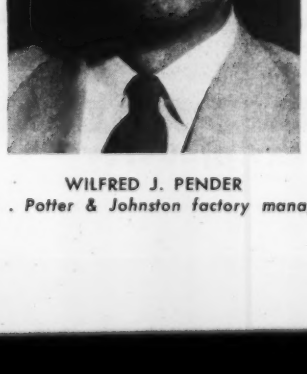
William J. Latch Jr. was appointed manager, Baltimore branch sales office, **National Radiator Co.** He succeeds the late **Lester R. Snyder.**

Globe-Wernicke Co., Cincinnati, appointed **Donovan L. Sayrs** manager, contract sales division.

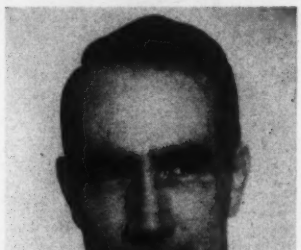
Edward P. Gillane was appointed vice president and general manager, **Potter & Johnston Co.,** Pawtucket, R. I., subsidiary of Pratt & Whitney, division of Niles-Bement-Pond Co. **Wilfred J. Pender** was appointed factory manager. These appointments follow resignation of **J. Earle Makant** as vice president and factory manager following 34 years of association with the company. Mr. Gillane joined Potter & Johnston in 1948 when the plant was taken over by Pratt & Whitney, and became vice president and controller. Mr. Pender joined the company in 1923, and following acquisition in 1948 became assistant factory manager.



EDWARD P. GILLANE
. . . V. P. & gen. mgr., Potter & Johnston



WILFRED J. PENDER
. . . Potter & Johnston factory manager



J. FREDERICK KEELER
. . . Orr & Sembower V. P.-sales & service

J. Frederick Keeler, sales manager, was named vice president in charge of sales and service, **Orr & Sembower Inc.,** Reading, Pa. **George H. Garraway,** director of engineering, was elected vice president in charge of engineering and production.

W. D. Millar and **H. E. Kaufman** were appointed division superintendent and assistant division superintendent, respectively, of blast furnaces, South Chicago plant, **Carnegie-Illinois Steel Corp.,** a U. S. Steel subsidiary. Mr. Millar succeeds **J. M. Stapleton,** promoted to assistant to vice president. Mr. Kaufman succeeds Mr. Millar.

Robert Paxton was appointed manager of manufacturing policy for **General Electric Co.,** Schenectady, N. Y., succeeding **Raymond R. Rausch,** vice president, who resigned to return to the automotive industry. In the apparatus department, large motor and generator engineering division, **Bascom H. Caldwell Jr.** was named assistant manager-engineering, and **D. E. Brainard, H. D. Snively, R. V. Shepherd,** and **R. W. Wieseman** were named division engineers. **Ab Martin** was appointed assistant manager, Fort Wayne, Ind., works. **W. C. Harris** was named manager of engineering, locomotive and car equipment divisions, succeeding **H. W. Gouldthorpe,** and **R. A. Hutchins** becomes assistant to the manager of the latter divisions.

GEORGE H. GARRAWAY
. . . Orr & Sembower V. P.-eng. & production

Chris Nitschke joined **Rockwell Mfg. Co.,** Pittsburgh, as a project engineer on the company's petroleum products.

Richard Meisenbach was appointed director of the newly created special products division, **J. B. Beaird Co.,** Shreveport, La.

R. Peacock was named sales manager, **General Reduction Co.,** subsidiary of Diversey Corp., Chicago. He is succeeded as manager of dairy industry sales by **H. A. Reiger,** assistant general sales manager and promotional director.

Horizons Inc., Princeton, N. J., announces addition to its Cleveland laboratory staff of **Melvin D. Fleisher.**

J. G. Graham was appointed eastern regional manager of locomotive sales, railroad division, **Fairbanks, Morse & Co.** He will be located in New York. **D. C. Prescott** was named district manager, locomotive sales of the southwestern district, with headquarters in St. Louis. **C. H. Morse Jr.** was appointed district manager, locomotive sales, Chicago area.

Robert B. Paysee was appointed assistant to the president, **Nesco Inc.,** Milwaukee.

Herbert Ashcroft Jr. joined **Bausch & Lomb Optical Co.,** Rochester, N. Y.,

to assist works manager, **Carl A. Day,** and division superintendents with general manufacturing problems.

W. E. Corr, formerly associated with **Iron & Steel Products Inc.** at Norfolk, Va., no longer is associated with this organization.

Wheeling Steel Corp., Wheeling, W. Va., appointed **W. A. Steele** general manager at the Steubenville Works succeeding **R. C. Diehl,** resigned. **Paul W. Koenemund** succeeds Mr. Steele as general manager, Benwood Works. At the general offices, **E. Tyler Davis,** assistant to vice president, takes over ore matters recently in charge of Mr. Steele.

Walter V. Ronner was appointed director of industrial relations, **Lewyt Corp.,** Brooklyn, N. Y.

Abart Gear & Machine Co., Chicago, appointed **O. W. Klima** chief engineer.

George L. Cobb was promoted to assistant general sales manager, **Soule Steel Co.,** San Francisco. He is succeeded as district sales manager for northern California by **Stanley L. Soule,** formerly in charge of special product sales.

Myran J. Livingston was appointed sales manager, petroleum refining division, **Arthur G. McKee & Co.,** Cleveland. **Jerry Brennan** was appointed sales engineer in charge of the company's sales office in New York.

K. L. KONNERTH
. . . Frick Coal V. P. & gen. mgr.-operations

JOHN E. BLOMQUIST
. . . industry mgr., Reynolds

K. L. Konnerth, formerly general manager of operations, was elected vice president and general manager of operations, **H. C. Frick Coke Co.** and **United States Coal & Coke Co.,** subsidiaries, U. S. Steel Corp., Pittsburgh. He has been associated with H. C. Frick Coke Co. and its associated companies for the last 28 years.

Frederick E. McMullen, Dwight Van de Vate, and **William M. Woodruff** were appointed directors of **Gleason Works,** Rochester, N. Y.

William Bruun was appointed representative in the midwestern district, working out of Chicago, for **Kennametal Inc.,** Latrobe, Pa. **F. O. Hill** was appointed service engineer in the Cincinnati district.

Adm. J. H. Ingram, U.S.N. (ret.), was elected vice president in charge of executive sales, **Reynolds Metals Co., Louisville,** which he joined in 1949. **John E. Blomquist** was appointed industry manager, industrial parts division, and will take over the sales management of Reynolds' fabricating plants.

Russell Stark was appointed director of purchases, **Burroughs Adding Machine Co.,** Detroit. He succeeds **A. E. Maus,** who becomes director of industrial engineering.

Lloyd H. Angstadt was named director of the Institute of Records Administration & Management Controls, to be opened this fall by **Remington Rand Inc.,** New York.

OBITUARIES . . .

Thorton W. Tinkham, 59, former general manager, **Bendix Aviation Corp.,** Detroit, died Sept. 8. He entered the automotive industry in 1914 as a tool and diemaker and rose to be production manager of Packard Motor Car Co. by 1920. After association with Olds Motor Works, he joined General Motors Corp. in 1928 and five years later was vice president in charge of all GM's overseas manufacturing operations until the outbreak of World War II. He joined Bendix and planned and produced the fuel injection pump for the B-29. He resigned in 1945, and was recently with Doeskin Products.

James H. Heroy, 69, vice president, **Pittsburgh Plate Glass Co.,** Pittsburgh, died Sept. 4.

George P. Fryling, one of the founders of **Erie Resistor Corp.,** Erie, Pa., died Aug. 31. He was chairman of the board of directors of the firm, and formerly was secretary-treasurer, Speer Carbon Co., St. Marys, Pa.

Allen H. Head, 75, retired vice president and general manager, **John Deere Implement Co.,** Waterloo, Iowa, died Sept. 5 in La Jolla, Calif., where he resided since retirement.

Philip J. LaSalle, 29, a junior executive, **Revere Copper & Brass Co.,** New York, died Sept. 5 of injuries suffered in the crash of an airplane.

John A. Flynn, 70, retired president, **Peninsular Machinery Co.,** Detroit, died Sept. 6.

William J. Davidson, 59, director, technical center, **General Motors Corp.,** Detroit, and active with GM since 1914, died in Goderich, Ont., Sept. 4. He held executive posts, successively, with Cadillac, Canadian Products Division, GM of Canada Ltd., GM Proving Ground, GM Research Laboratories, and GM Diesel Engine Division. During the war he managed the GM automotive ordnance section and subsequently was engineering director for the war products section.

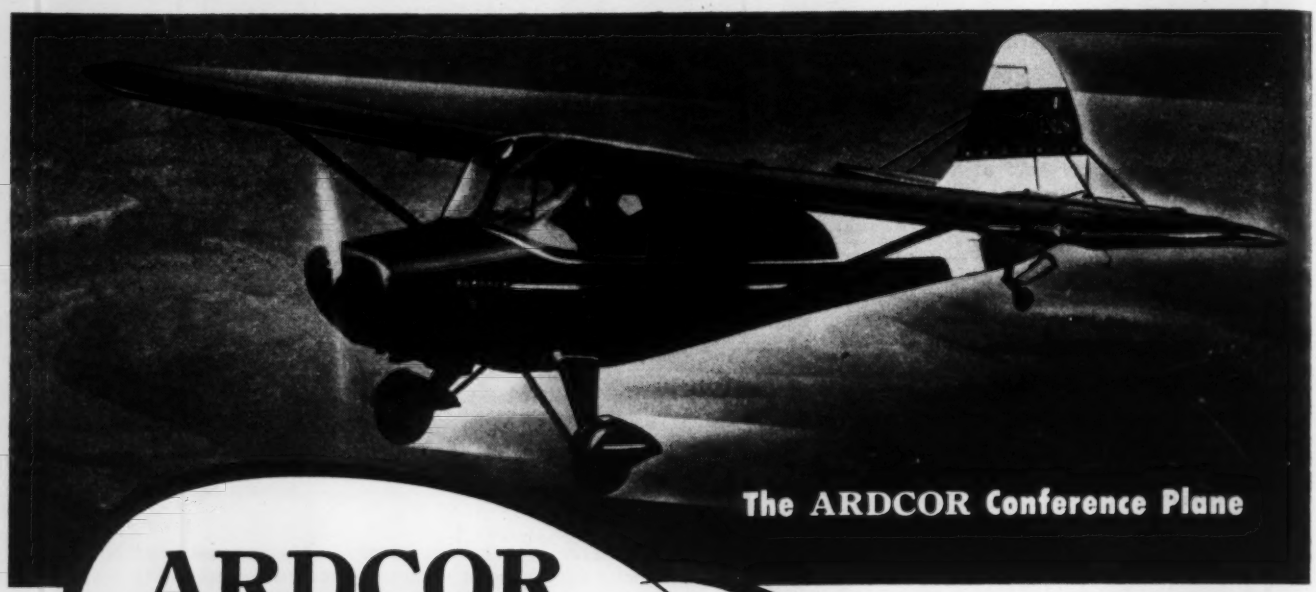
Louis Hoysradt, head of **L. Hoysradt Machinery Mfg. Co.,** Kingston, N. Y., died Sept. 6.

George F. Roecker, 47, vice president, **Leach Steel Corp.,** Rochester, N. Y., died Sept. 6.

John M. Angier, 41, president, **Angier Corp.,** Framingham, Mass., died Sept. 4 after a brief illness.

W. H. Driscoll, 71, vice president, **Carrier Corp.,** Syracuse, N. Y., died Sept. 6 in Jersey City, N. J., where he resided.

William F. Detweiler, 69, retired chairman of the board, **Allegheny Ludlum Steel Corp.,** died in Butler, Pa., Sept. 5.



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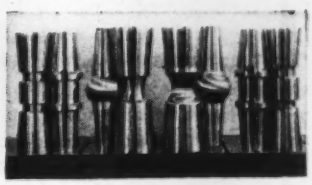

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Production AND Engineering NEWS AT A GLANCE

WATCH ENAMEL UNIFORMITY— In applying enamel it is important to apply the finish over all areas of the work uniformly. Areas of heavy enamel, the *Enamelist* points out, are more subject to fracturing during assembly, shipping and use. Also thin areas cause rejection on inspection. One satisfactory means of testing uniformity on coated pieces is to use a magnetic thickness gage. The gage can be used to measure the dried enamel film before firing, but measurements made after firing are more accurate. If the dry-film thickness is measured it may be found to be about 25 per cent thicker than the fired coating.

DIFFICULT MADE EASY— If you are having trouble obtaining accurate hard carbide shapes, you might be interested in knowing of the process employed by Method X Co., Philadelphia. Technique involves use of a special machine and skilled procedures which result in holding dimension on most parts processed as close as 0.002-inch. The method not only eliminates 80 to 90 per cent finished grinding time on the parts, but also makes each part identical as to tolerance regardless of the quantity. The process does not effect the structure of the carbide material in any way.

TWO OF "BEST" COMBINED— If you are looking for a metal that has high resistance to oxidation at high temperatures, plus high heat and electrical conductivity with good strength—it is now available. Best qualities of two metals—nickel and copper—are combined in the nickel-clad copper material developed by Alloy Metal Wire Co. Inc., Prospect Park, Pa. The metal is not plated but a new combination of solid metals. Its applications include lead wires, electronic tubes, electrical appliances, infra-red ovens, electrical resistance and induction furnaces. It also can be used as fixture wire in plating and pickling departments.

RESEARCH BIG FIELD— Research is now big business. In 1930, according to Foster D. Snell Inc., New York, a firm not doing research on its present and future products and processes was at a disadvantage. But the disadvantage was not as great as today. In 1930, expenditures for research amounted to only $166 million. By 1940 it doubled. This also means that the disadvantage of the firm not doing research also doubled. Today research takes a little less than half of one per cent of the national income, and is heading toward a billion dollars per year. Many companies today spend about 2 per cent of their gross sales for research.

MORE AID TO FINISHERS— A patented process that prepares aluminum for paint finishes developed and used by Pyrene Mfg. Co., Newark, N. J., for a number of years, is now being made available to other companies. The process, which is adaptable to either large or small scale production, does two things: It gives an attractive coating of definite corrosion resistance value and provides an adhesive base for paint finishes. An immersion method, it is simple to operate, employing a powder whose ingredients are proportioned and premixed. Unless there is an exceptional amount of grease and dirt on parts being processed, no special advance cleaning is required.

WELDING REJECTS DOWN—One way to beat the reject problem in your plant is to use a little ingenuity. At least that is how C. S. Brawn Co. of Los Angeles did it when confronted with too many rejects in seam welding major components of heat exchangers. The company developed a modified submerged-arc process that today is minimizing overall welding costs. Most of the equipment used is composed of standard welder components except for a special device that constantly submerges the arc in the flux. (p. 106)

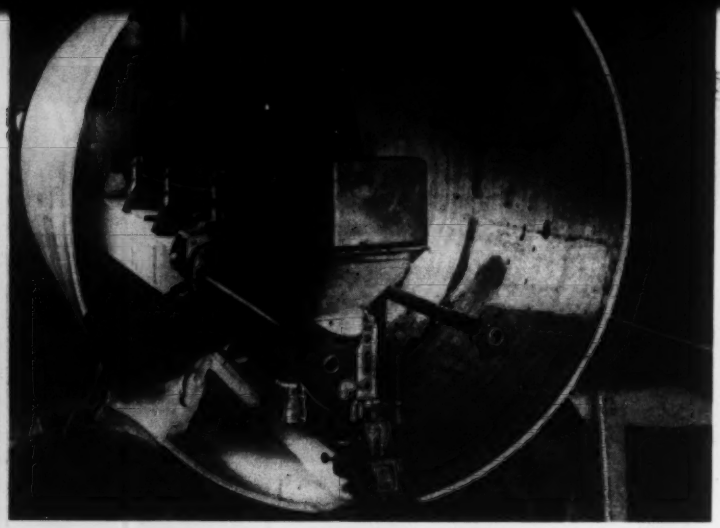
SAVE HAND MOTIONS — Manual operations on the production line often consume more time than necessary. One way to improve productivity where considerable nut setting, filing and screw driving are required is to use pneumatic tools. If already using power tools, then it's a matter of checking whether or not these are the most efficient for the purpose. Compressed Air & Gas Institute says many very common operations offer great opportunity for increasing output and cutting costs. (p.107)

ALL STEEL SHOW — Because the steel industry is embarked on a large program of expansion and modernization which must be completed in record time, the biennial Iron and Steel convention and exposition in Cleveland's Public Auditorium, next week — Sept. 26-29 — takes on added importance.

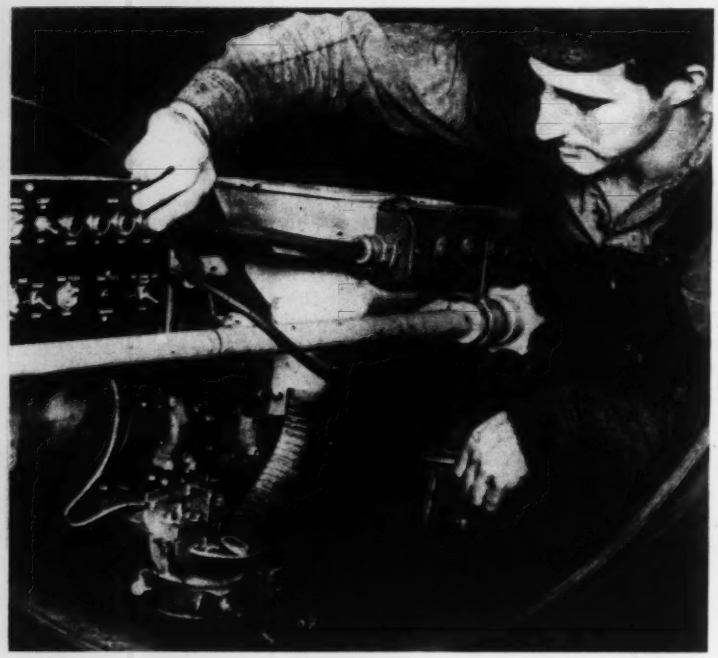
The affair will provide steel plant personnel an opportunity to get information on latest developments that lead to greater efficiency and production. Some entirely new products and processes will be revealed among the more than 150 exhibitors.

A feature of the meeting is an inspection trip to the Lorain plant of National Tube Co., where new bessemer, rolling mill and seamless tube facilities recently started operation.

This week, STEEL, in a special section, highlights on p. 118, some of the important activities of the meeting. In it you will find the complete AISE program, p. 121, a list of exhibitors, p. 124, and two special articles. One of these, p. 111, will give you an idea of what's ahead in steelmaking, the other, p. 114, provides facts that show the steel industry, capacity-wise, is in the best position it's ever been in its history.

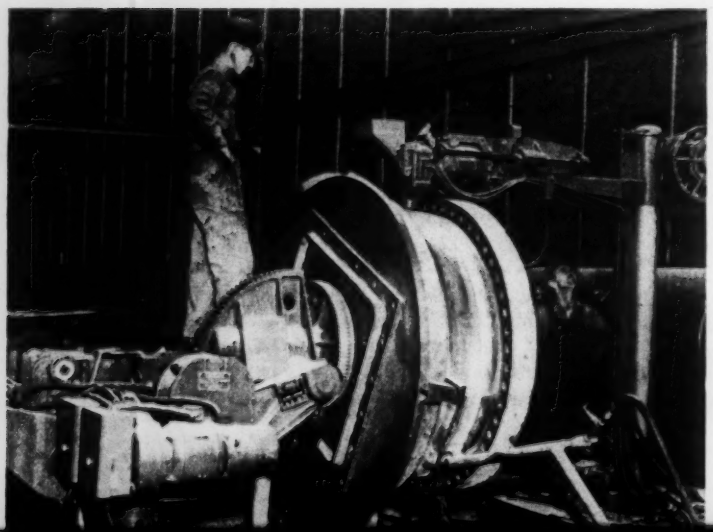


Front view of submerged-arc welder. Note flux dispersal hopper. Cantilever beam on which output controls are mounted can be seen in background



Closeup of controls for unusual submerged-arc welder developed by Los Angeles company to minimize oxidation in seam welding large heat exchanger components

Setup employed by company for welding circumferential seam. Note wire filler material leading to work area



Modified

Submerged-Arc Process Lowers Welding Costs

IF A PROCESS is not available to fulfill your needs, the thing to do is to develop or modify one—even if it requires borrowing standard "tools" to help the cause along.

That about sums up what happened at C. S. Brawn Co., Los Angeles, when a method was sought to minimize oxidation in seam welding major components for heat exchangers. As a result, a modified submerged-arc process developed by the company is minimizing overall cost of welding operations by substantially reducing the normal quota of rejected assemblies.

Fuses Large Joints—Method employed by Brawn is principally useful in producing fairly large joints in areas that are relatively accessible. Welders used in the process essentially comprise parts of standard seam welders, but can be distinguished from conventional equipment in that each is equipped with a device that constantly submerges its arc in the flux.

Twelve submerged-arc welders have thus far been constructed to facilitate handling work of different dimensions. These are powered with 400 to 1500 amperes of either direct or alternating current. Controls and related output components for each unit are mounted on a cantilever beam, and special motor-powered holding fixtures are utilized to maintain desired alignment of parts as circumferential or longitudinal seams are made.

Special Flux "Scoop"—Parts welded normally comprise rolled steel plate, each is edge-beveled on two sides to provide landed V-shaped grooves for retention of flux and molten metals as the initial portion of a seam is welded. Each seam is produced by welding from two sides; when the second side is welded, the land area of the parts edges is completely fused into the joint.

Flux is supplied from a hopper on the cantilever beam for each welder. The hopper includes an outlet tube which disperses flux in the V-shaped groove for each portion of a seam for a distance of several inches ahead of the welding arc.

Wire filler materials are fed automatically into the welding arc, as needed, to produce an assembly. A follow-up vacuum line on the cantilever arm for each welder reclaims loose flux particles that remain in welded areas.

Finished welds, according to x-ray inspections, reveal virtually complete lack of defects.

Can Compressed Air Lighten Your Production Costs?

Abundant opportunities for improving productivity exist in every plant. Here are some practical pointers on how to find them and what to do about them

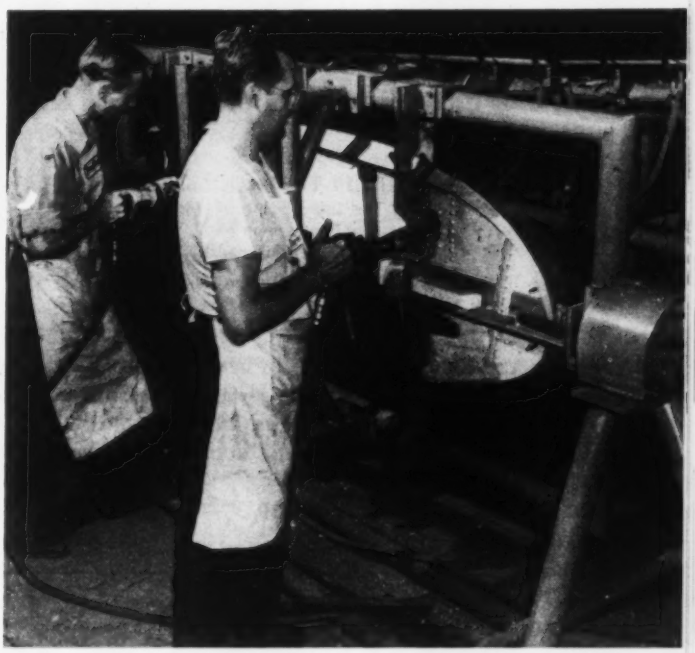


Fig. 1—Precision-built type of fixture used at Twin Coach for subassembly work. Small, hand-held air-powered squeezer and drilling tools are utilized

IN THESE days of high production costs, metalworking companies are leaving no stone unturned in their search for means of effecting manufacturing economies. Aiding in this exploration, the Compressed Air & Gas Institute points out some paths individual companies can follow to advantage.

First, the institute recommends, examine all hand operations to see if any can be performed by pneumatic tools. Nut setting, burring, filing and screwdriving are among the most common operations offering such opportunities for cost cutting.

Using the Right Tool?—Check the power tools now in use to see if more efficient tools should replace them. Where savings are small in production time, but the percentage of use is high, above 50 per cent for instance, investment in the right tool is usually warranted.

Screwdriving and nut setting studies may start with a consideration of the torque required. If there has been trouble in obtaining uniform torque, several sizes and types of tools should be tried as well as various heads. The right selection will eliminate scrap and rework time.

Quality of the job should be examined to see if it is up to standard and the (*Please turn to Page* 138)

Fig. 2—Heavy-duty vertical grinder operating flared cup wheel at high speed. Cutting action is rapid and general finish is smoother than with grinders. In operation, tool is tipped slightly affording a wide area of contact for fast cutting

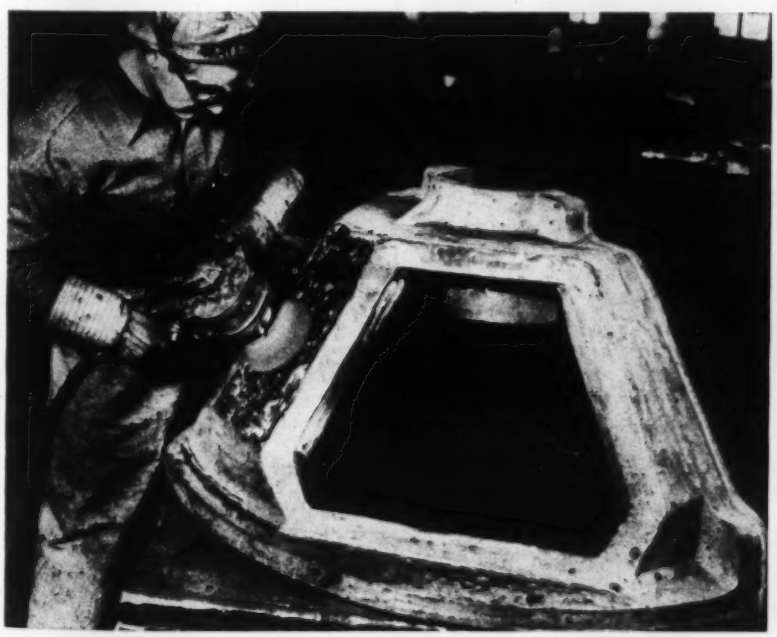
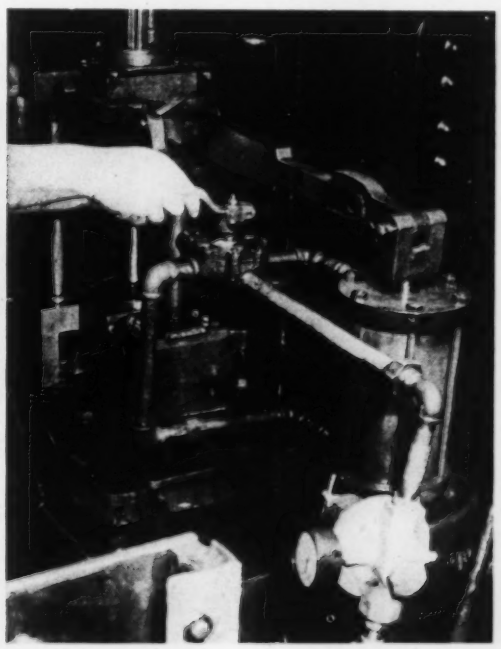


Fig. 3—Air piston, right foreground, clamps oil well liners positively in place during honing. The attachment permits more production and better precision



Cartridge Cases from Round Stock

Metallographic studies of parts produced by progressive steps of the Manurhin process reveal excellent structural properties imparted to the brass by cold working

PART II

By ARTHUR F. MacCONOCHIE
Head of the Department of Mechanical Engineering
University of Virginia
Charlottesville, Va.

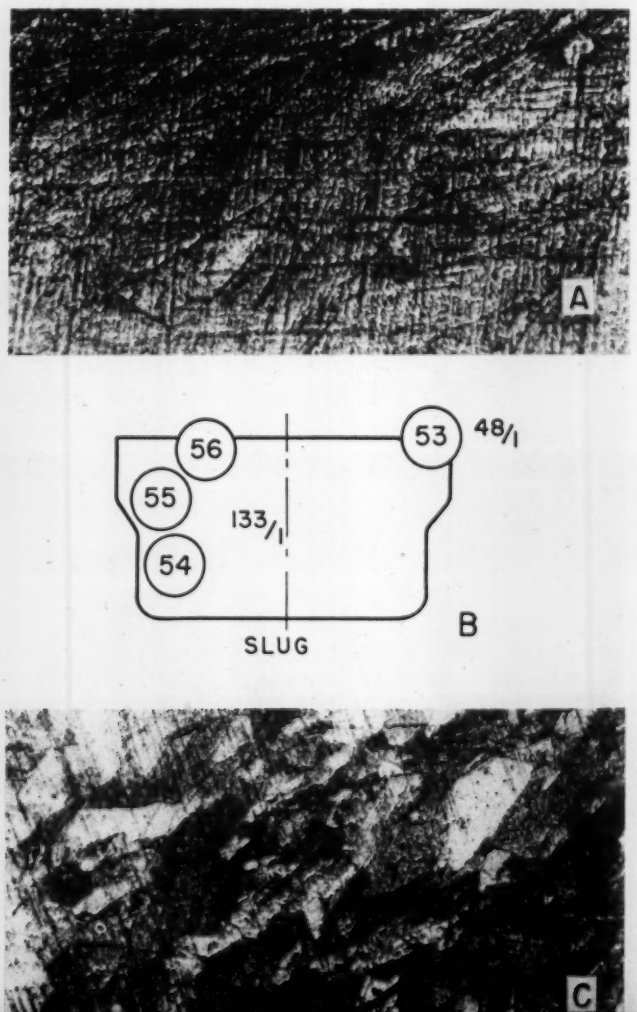
Prior to World War II, a French company made hundreds of millions of rounds of small arms ammunition components by a process which saved enormous amounts of material. The method, described in STEEL, Sept. 11, consists of shearing blanks from extruded brass rod, shaping these to form slugs which are cupped and drawn into finished cartridge cases.

METALLOGRAPHY of Manurhin components reveals the excellent structural conditions cold working imparts to the brass. Metallography of the sheared blank is exhibited in Fig. 8. Exhibit B is from the core of the blank, while A and C specimens were cut transversely across the sheared surfaces. These latter show the effect of shearing work. Grains of the metal, originally polygonal, are drawn out and curved around in the direction of the force applied by the shear jaw.

These zones on the upper and lower faces of the blank, so heavily cold worked and toughened, eventually become the inside and outside surfaces of the draw. True, the annealing between the slug and cup stages masks most of this, but the ghost of the cold

Fig. 8—Metallography of the sheared blank. Exhibit B is from the center of the blank. It shows the polygonal structure but little affected. A and C show the effect of shearing work

Fig. 9—Metallography of the slug produced from the blank by pressure in a closed die. A is from the upper surface at point marked 56. C is taken at point 55 near the collar



worked structure remains to strengthen the case where it needs it most.

Brass Consolidated—Fig. 9 includes photomicrographs (x 133) of sections cut transversely across the upper surface of the slug in the recess, and at the point of inflection of the slug profile slug where the larger upper diameter diminishes to the collar dimension. In this slugging operation there is a minimum of cold work in those regions where the shear produced a maximum of distortion.

In A, near the recess, "kneading" action of the punch is evident. C shows lines of flow. All such actions tend to integrate and consolidate the brass, rendering it fit for the severe duty required of a cartridge case.

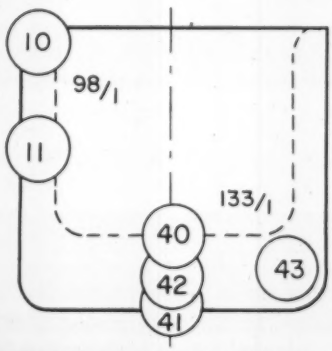
Smooth Lines of Flow—Metallography of the first draw, coming off the vertical press is shown in Figs. 10, 11 and 12. The key diagram is shown in Fig. 10, top. With its aid, locations of various sections and the magnifications may be determined.

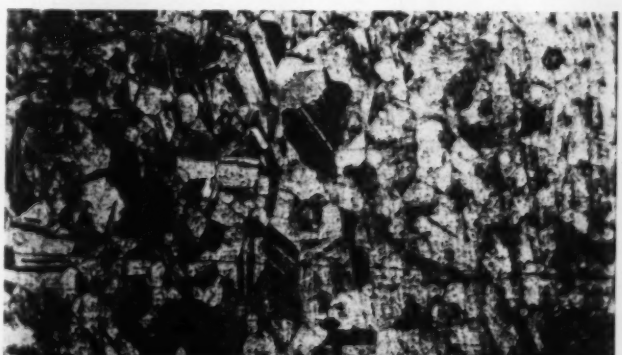
These photomicrographs show effectively the smooth lines of flow of the long, fiber-like structure of the original polygonal grains. The phenomena of flow is illustrated by the diagram, Fig. 12. Only near the lip of the draw, where the brass was subjected to the small backward extrusion of the slugging operation with little distortion, is the original polygonal structure in evidence. The so-called Riedel "pressure cone" which tends to accompany deep piercing operations (especially with a blunt punch) makes itself apparent, but circumscribed and suppressed by the strong flowing lines of the draw.

Structure Unaffected by Rolling—For the sake of comparison, the metallography of a cup drawn from a flat blank punched from strip, is shown in Fig. 13. As before, numbers in the circles on the diagram identify the position of the microsections. The strip was annealed prior to blanking.

In this case the familiar polygonal structure of the brass, apparently unaffected by rolling and, of course, not subjected to any cold work during blanking and cupping, appears in the base of the cup. But around the radius, where the action of the cupping die begins to affect the structure, lines of flow appear. These are well marked in the cup walls. The occasional appearance of cracks around the base of the subsequent draw are due to the sudden transition from the polygonal structure of the base to the fibrous structure of the walls of the cup, when drawn from strip.

Fig. 10—Photomicrographs of the wall of the first draw. Note the persistence of the polygonal structure near the lip of the draw, where cold work has been least severe





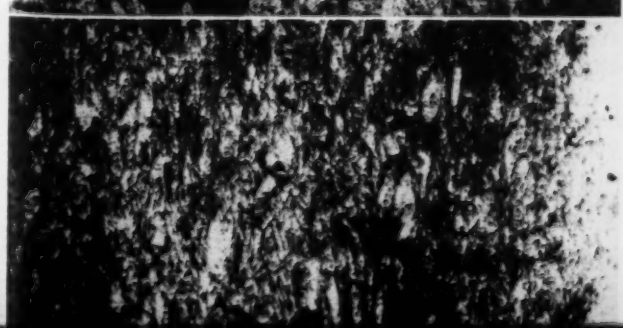
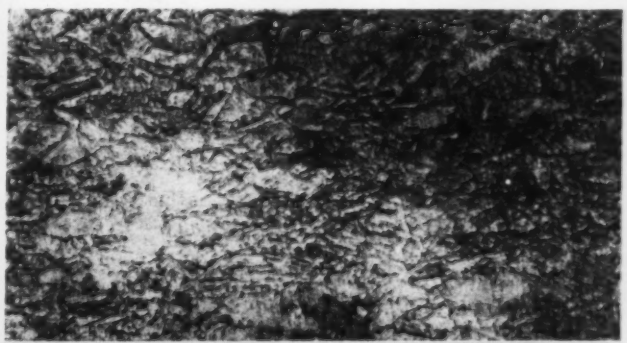
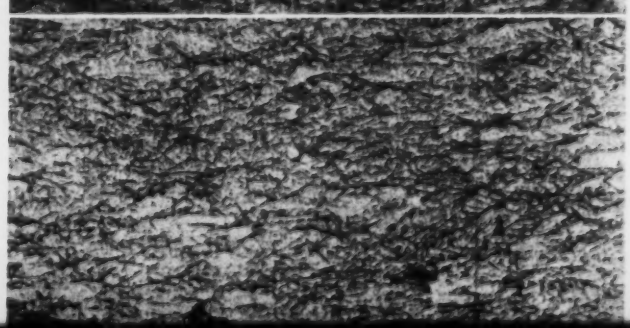


Fig. 11—Photomicrographs of base of draw from the vertical press. These were taken to show how effective the cold work of the metal in the Manurhin process is. There is a total absence of any transition zone such as occurs in a cup pressed from a flat strip





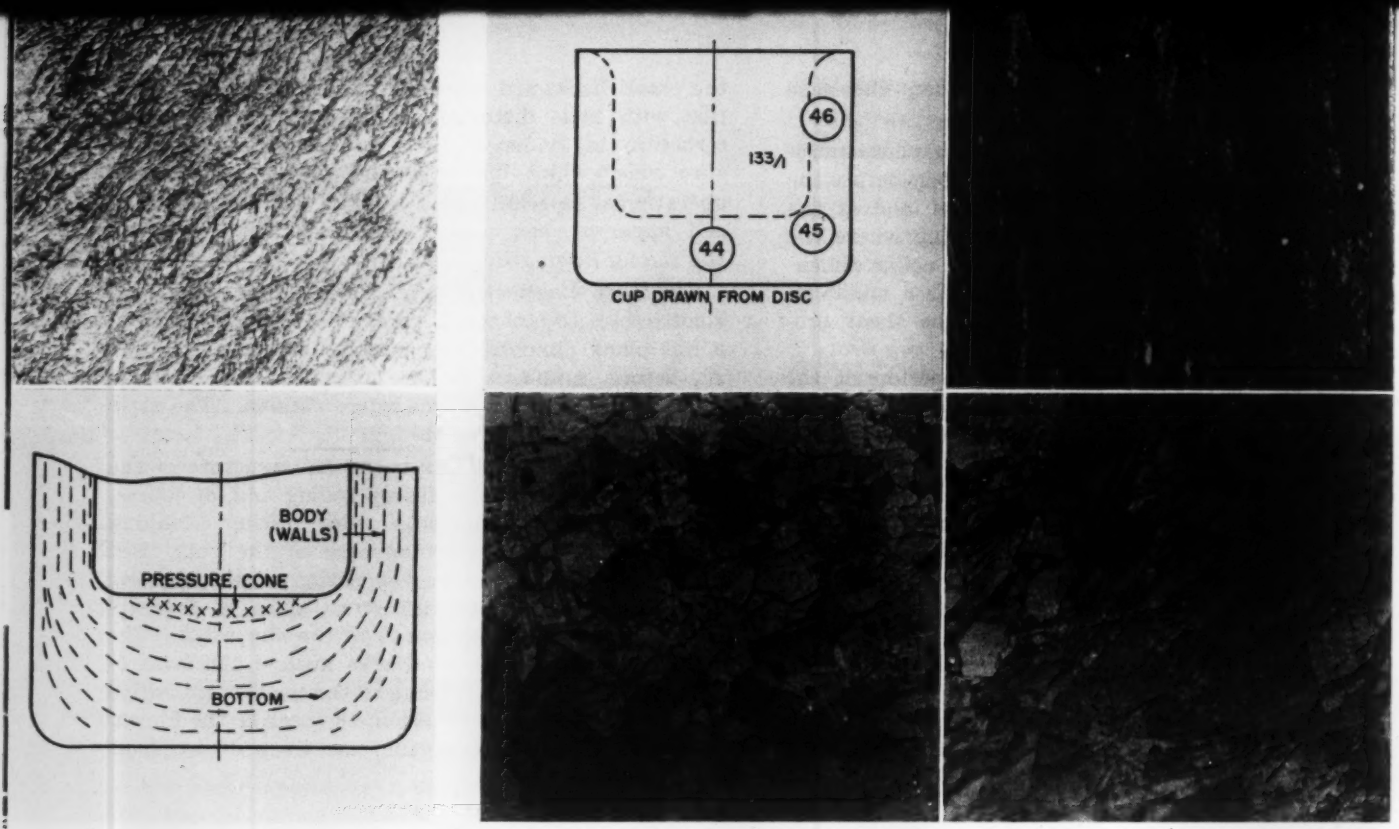


Fig. 12 (left)—Diagrammatic sketch of lines of flow in the draw coming off the vertical double punch press, which transforms the slug in two operations into the beginning of a cartridge case. Note existence of a small pressure cone in the center of the base. The photomicrograph is taken from near the internal radius

Fig. 13 (right)—Photomicrographs of a cup drawn from a disk blanked out from flat strip. Note the polygonal structure in the base and evidences of drawing on the walls. The transition zone between the worked and unworked metal, is supposed to be an occasional cause of failure in subsequent draws. Sometimes the punch goes right through the component severing the brass around the base

Fig. 14 shows one corner of the Le Mans plant of the Manufacture de Machines du Haut-Rhin Co., organized for making cartridge cases according to the Manurhin process. These are the vertical PKZ presses, which transform the slugs produced by the horizontal PKE presses into cups and first draws in two operations.

Progress in the United States—Some years ago cartridge cases were produced at Frankford Arsenal by a combination of drawing and extrusion in which the cartridge case was made from an extruded blank through one extrusion operation and one drawing operation, the raw material being brass rod. Reason for the nonadoption of the technique at the time was our extremely limited capacity for the production of brass rod. The end product, however, was satisfactory. Remington has not—at least in recent years—employed extrusion methods for the production of brass cartridge cases.

How Cases Are Drawn—Thirty-four years ago, in the Royal Laboratory, Woolwich Arsenal, England, the 70-30 brass was melted in an underground coke fire and poured into a ring of long rectangular molds, standing nearly upright on a turntable which rotated past the pouring point. The cast slabs were trimmed and rolled down in a series of passes and intermediate annealings, to "strip" which in its coiled, annealed and pickled state, was fed to the combined blanking and cupping operation, the first stage in an extended series of drawing heading, trimming, tapering and necking operations required to produce a case.

Improvements were made in the interim. The induction furnace has replaced the old pot fire; and much has been done to eliminate the vast amount of labor formerly required to feed the individual machines. But, in the ordinary course, the blank is still cut across the grain leaving end grain looking out of the rim of the cup as a source of potential trouble from "splits". And minor blemishes arising from vehicles or dirt, especially near the surface of the strip, are rolled into long hair-like "rokes" whose potentiality for mischief will readily be recognized.

By comparison, the advantages of rod are apparent.

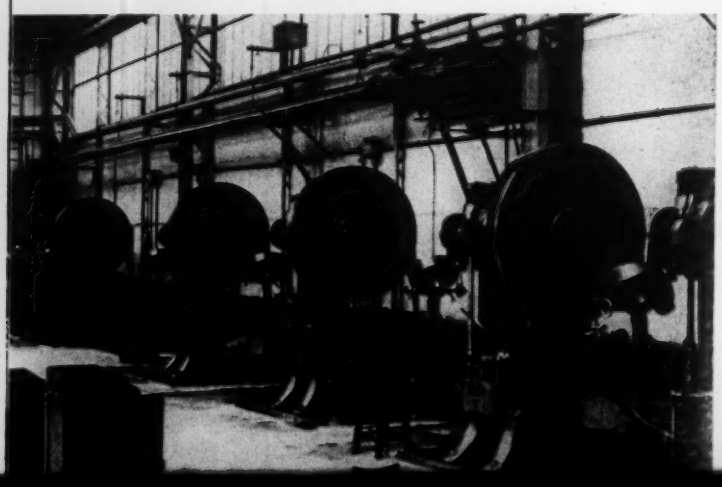


Fig. 14—Corner of the Le Mans plant of Manurhin. These machines disappeared during the war

What's Ahead in Steelmaking?

Taconite development, larger blast furnaces and open hearths, faster continuous galvanized and tinning of coiled stock, continuous casting and new extrusion processes hold promise for next decade

By JOHN D. KNOX
Steel Plant Editor, STEEL

SHOULD the steel industry maintain the pace it set during the last decade, the next ten years should see full development of many techniques now in embryonic stages.

Constant pressure for more steel stemming from two emergencies—World War II and postwar production—nurtured the accelerated progress over the past decade. Besides developing several new processes, finding additional high-grade ore sources and discovering methods of utilizing low-grade ores, the industry's research-momentum has brought it to the threshold of still newer technological developments.

Already on drawing boards is a continuous annealing and cleaning process which will produce tin plate and have it ready for shipment in 48 hours. Another development in the experimental stage is an extrusion process of French origin which may open a new era of mechanical design. Still another process in about the same state is the turbo-hearth method which thus far indicates the possibility of making open-hearth quality steel at faster rates.

Also showing great promise are continuous casting methods. One of the casting machines which is captivating the interest of several prominent steel companies is to be built by a British steel producer, based on experimental work performed at an Ohio steel plant.

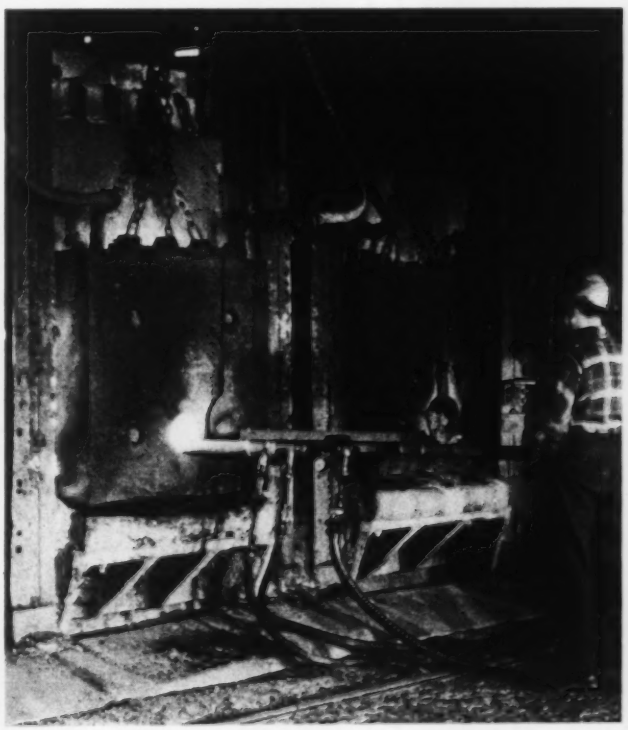
Decade of Progress—The past decade saw the world's largest open hearth tapping out 550-ton heats for the first time, seamless tube and pipe mills using new rolling theories, and galvanizing and tinning lines delivering a continuous flow of coated stock. It also saw the exploration of low-grade iron ore deposits on the Mesabi range, and discovery of rich deposits in Venezuela, Canada, Labrador, Africa and elsewhere. This spread an atmosphere of cheer throughout the ranks of steelmakers whose hopes had been laid low by adverse reports concerning future ore supplies.

To take advantage of tidewater delivery of foreign ore, United States Steel Corp. plans construction in the near future of a new integrated steel plant on the Delaware river south of Trenton, N. J. The first unit will include steelmaking facilities with a minimum ingot capacity of 700,000 tons annually.

Taconite Processing — Development of additional iron ore supply is being undertaken by the Erie Mining Co., Aurora, Minn., where a plant is being built to agglomerate 200,000 tons of taconite annually. Success of this operation means upgrading of millions of tons of taconite rock in the Mesabi region for at least 50 years.

Construction also is underway on an experimental agglomeration plant for processing taconite and fine ores by the Oliver Iron Mining Co. at Virginia, Minn. Output is expected to approximate 1,000,000 tons annually. The new plant will be the first combination sintering and nodulizing plant operated on the Mesabi range.

High-Top Pressure Operation—Eight blast furnaces in this country continue to yield high productivity and with greater economy under this procedure. Flue dust output has also declined. Downtime for mechanical repairs while high at the outset is now no more than on stacks operated with normal blowing. Hard facing the bell has overcome erosive tendencies which plagued early operation. Large turboblowers of 125,-



Jet device being used by an operator for feeding oxygen into the hearth of an open-hearth furnace to hasten scrap meltdown

000 cfm capacity and capable of delivering air at 40 pounds per square inch now permit a 12-pound top pressure to be maintained with consequent increase in pig iron production and attendant lower coke consumption.

Experimental operations of a combination blast furnace-cupola melting unit were inaugurated at midyear at the Brackenridge, Pa., works of the Allegheny Ludlum Steel Corp. The process converts a low-grade light scrap to a molten state for charging into the open hearths; it also is employed for recovering iron for open-hearth heats from high-titanium ores. Resultant titanium slag is refined into titanium matte and then reused.

Continuous Casting Developments—A Goss continuous casting machine, based on experimental work at an Ohio steel plant, will be built by a British steel producer. The machine will employ a mold 4 x 16 inches and 5 feet long, capable of casting 1000 pounds of steel per minute. Because of the advantage of casting steel in slab sections the process has aroused the interest of several prominent American steel companies.

Testing facilities have been enlarged at the experimental continuous casting plant at Beaver Falls, Pa., operated jointly by Babcock & Wilcox Co. and Republic Steel Corp. The induction furnace originally installed as a holding furnace has been replaced with a 7-ton arc furnace to increase the supply of hot metal. A light beam directed across the level of the metal in the mold is tied in with a solenoid which controls the tilting mechanism of the arc furnace. A visual check of the metal level in the mold at all times is afforded by use of a television camera mounted some distance above the mold and sighted on its interior.

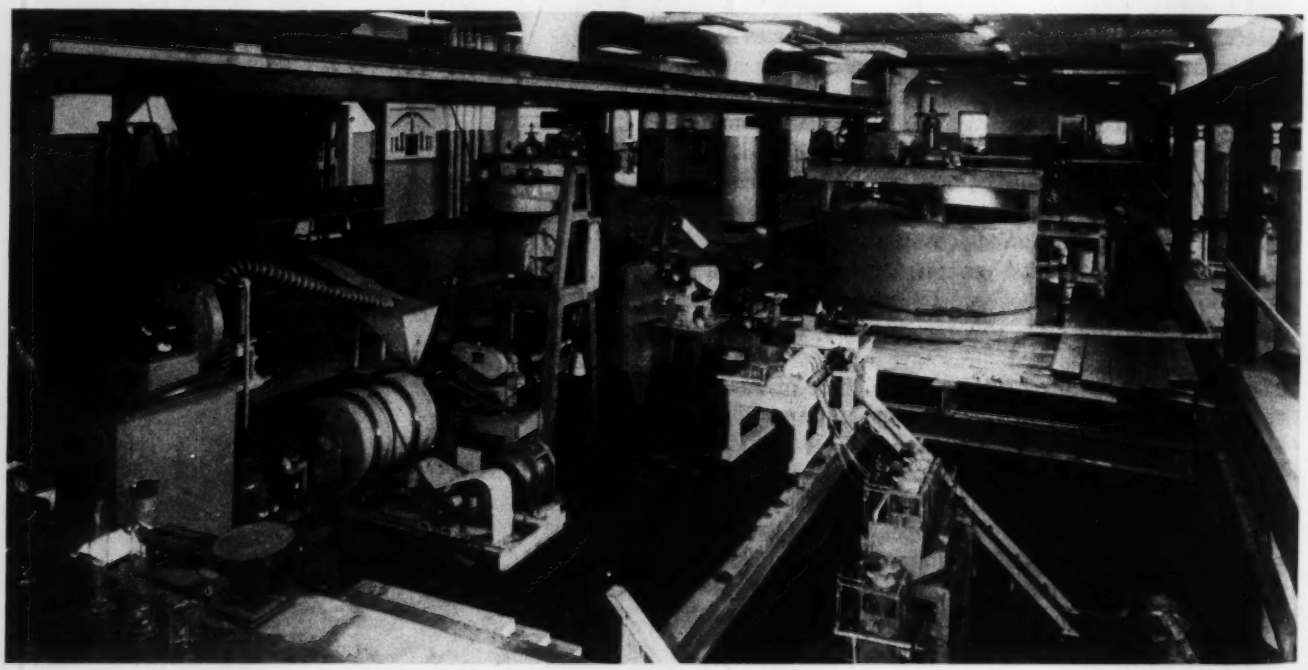
Instead of making heats in electric furnaces at ground level and elevating the hot metal to the casting floor, proposed plans call for a production plant at casting floor level which will be 40 feet above ground level instead of 75 feet as at present. An automatic billet cutoff device is to be installed as well as facilities to permit cut-sections to be delivered directly to the runout table.

New Steelmaking Process—Production of steel of open-hearth quality by the new turbo-hearth process with 12 minutes as the average time of heat has proved chemically sound and metallurgically feasible by numerous test operations. Development of the turbo-hearth vessel and process is jointly shared by Carnegie-Illinois Steel Corp. and Jones & Laughlin Steel Corp., Pittsburgh. The partially closed side-blown convertor is capable of withstanding temperatures over 3000° F. Field work discloses that up to 97 per cent of the phosphorus and up to 50 per cent of the sulphur can be eliminated and also that the carbon can be oxidized to below 0.03 per cent, manganese below 0.01 per cent, and silicon below 0.01 per cent. Plates rolled from turbo-hearth steel have possessed tensile and bending properties that are equivalent to open-hearth steel of similar composition.

Oxygen Widely Used—A questionnaire survey disclosed that practically all steelmakers are using oxygen either for flame enrichment or decarburization, or at least experimenting with it. Although some are pleased with the results they have discontinued its use. In some plants oxygen cannot be used economically for flame enrichment with existing facilities because of the difficulty in getting furnaces charged rapidly enough to take advantage of the faster melt-down achieved by use of combustion oxygen. Study discloses that as much sulphur can be eliminated by normal working practice as can be eliminated when oxygen is used, but with a loss of operating time.

Handling System Speeds Charging—Faster charg-

Pilot plant area on first floor of new research laboratory, Duluth, Minn., showing different levels for equipment of ore flow sheets

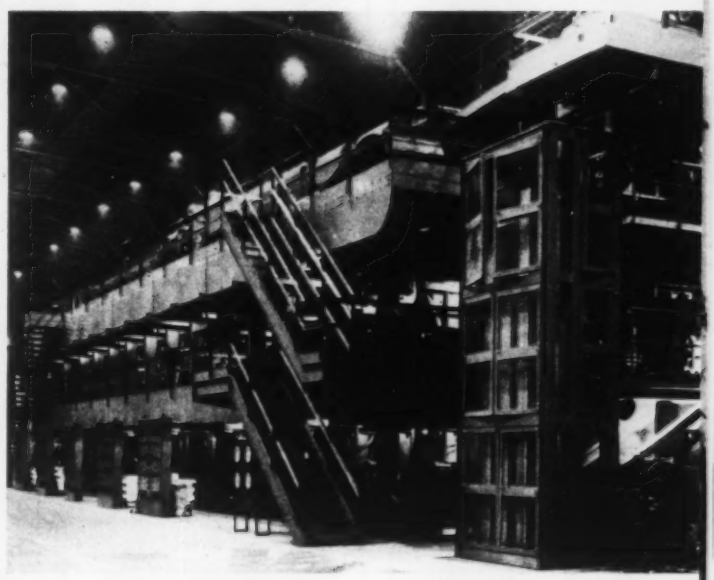


ing of open hearth and less interference in the operation of adjacent furnaces are expected from a new system of handling charging boxes being installed with the furnaces now being built at the Middletown, O., plant of Armco Steel Corp. Loaded boxes are hoisted from the cellar of the shop through an opening near one end of the furnace to the charging floor where they are easily handled in and out of the furnace by the charging machine. Empty boxes are returned to the cellar through an opening in the charging floor at the opposite end of the furnace. One box is handled every two minutes. By this arrangement the stockyard can be operated at a more even rate, efficiency of the furnaces increased and charging delays avoided thus resulting in better fuel efficiency.

Vanadium Corp. of America has arranged with a French concern to employ its new process for melting down a heat of steel. The steel is made to react by emulsification with a synthetic slag which eliminates oxygen and sulphur. A charge of 25 tons is rapidly melted without considering the degree of oxidation of the bath. Refining time is nearly eliminated and replaced by the flow of liquid steel into a vessel containing a synthetic slag so that both sulphur and oxygen removal is instantaneous and predictable. The new technique reduces the time from cold charge to ingot teeming by 2 to 2½ hours.

Justification for the process is that a basic-bessemer steel gives a high-quality heavy-stamping sheet steel. The process as applied to open-hearth furnaces permits mass production of the same quality of high-grade steels that is now being made in other furnaces.

Mill Delivery Is Faster—Increased operating speeds of various continuous rolling processes during the past 10 years has been the main factor in increasing

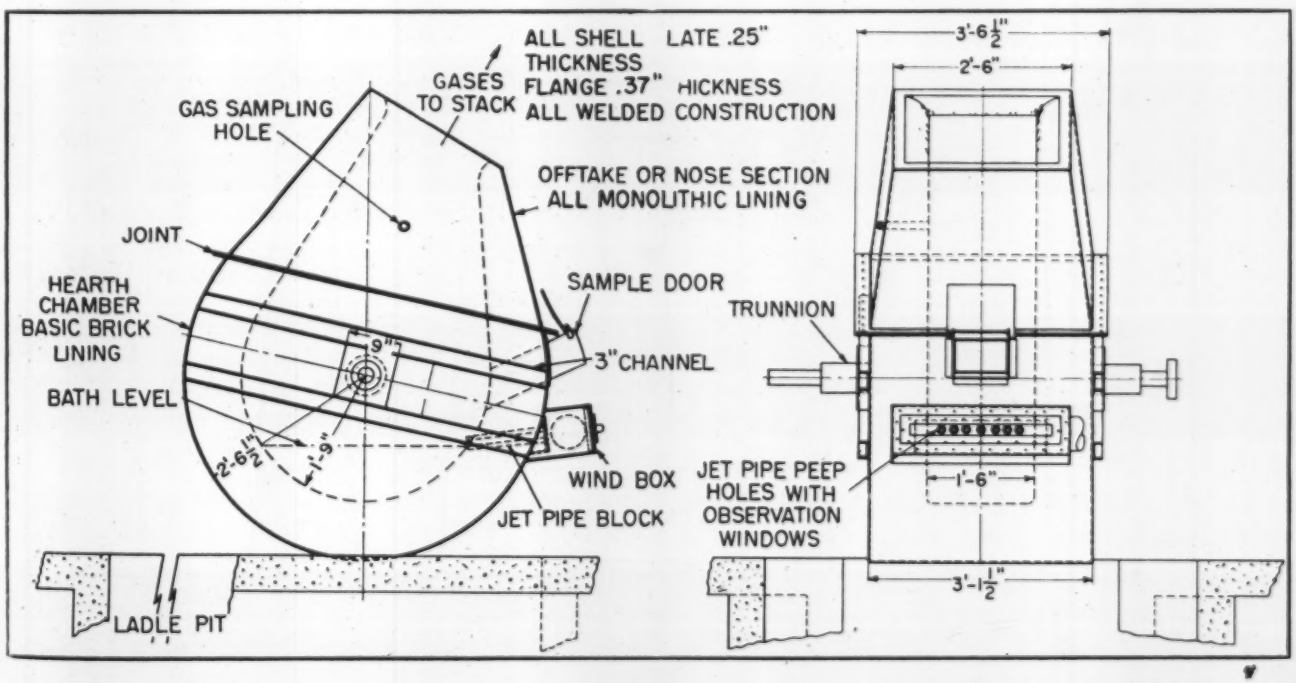


Continuous electrolytic tin coating line capable of putting thin coating of tin on strip moving at rate of 2500 feet per minute

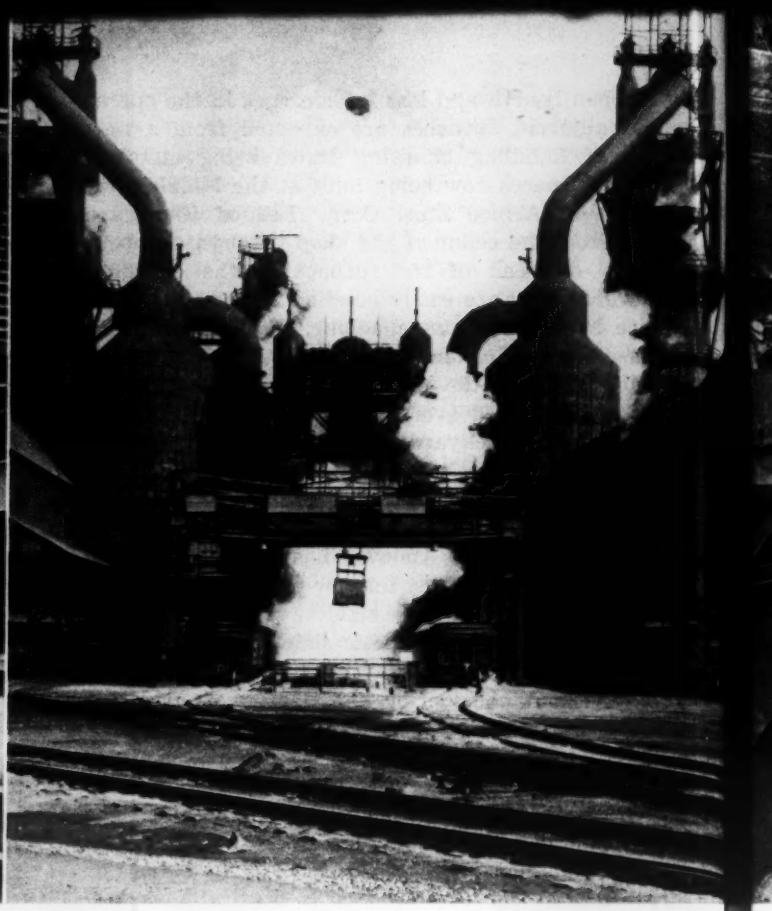
production and lowering manufacturing costs. Certainly pipe and tubemakers have taken advantage of this trend. At the outset the Fretz-Moon type tube mill had a maximum speed of approximately 400 feet per minute, whereas today 1000 feet per minute is attained through the application of synchronized motor drives and their appropriate control auxiliaries. Cutoff equipment also has been improved to the point where an adjustable flying saw mechanism cuts the pipe in any desired length from 18 to 54 feet at higher speeds than previously possible and with an accuracy of plus or minus 0.50-inch.

An entirely new development features a new seamless and welded tube mill which employs a mandrel and incorporates the stretch-reducing process in 12 separate powered stands (*Please turn to Page* 136)

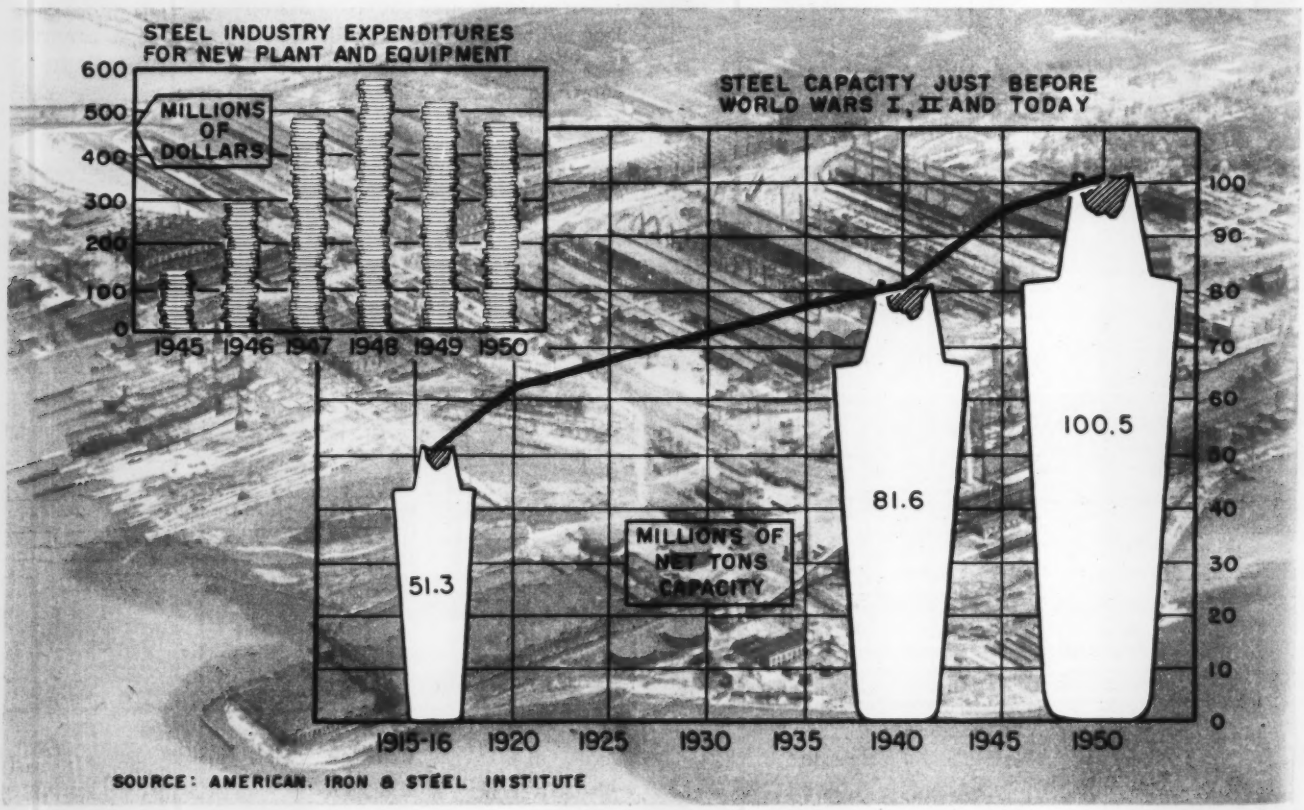
Basic lined turbo-hearth vessel capable of making steel of open-hearth quality in 12 minutes without application of external fuel



Improved oven design and better auxiliary equipment for charging and handling help produce more and higher quality metallurgical coke. Powerful ram is shown here pushing a load of glowing coke from the oven



Addition of several blast furnace plants similar to the one above containing twin 1500-ton units, has increased pig iron output substantially since World War II. Use of higher top pressures on some existing furnaces has also helped boost production



Greater open-hearth steel tonnage is assured by operation of this world's largest 550-ton unit shown above being tapped

Keeping pace with the increased demand for alloy steels are many massive electric arc furnaces, like the one being poured above

More Steel for War and Peace

IF WAR COMES, the steel industry today is in better shape to meet the nation's requirements than at any time in history. Facilities under construction will further improve the steel supply situation in the next two years and plans now in the talking stage are certain to blossom into additional capacity.

In 1940, the steel industry had 81.6 million tons of steel ingot capacity. During the war, the steel industry spent $1.1 billion for added facilities, the government $931 million. Old plants also were patched up for the duration with the result that the steel industry under optimum conditions could squeeze out 95.5 million tons annually.

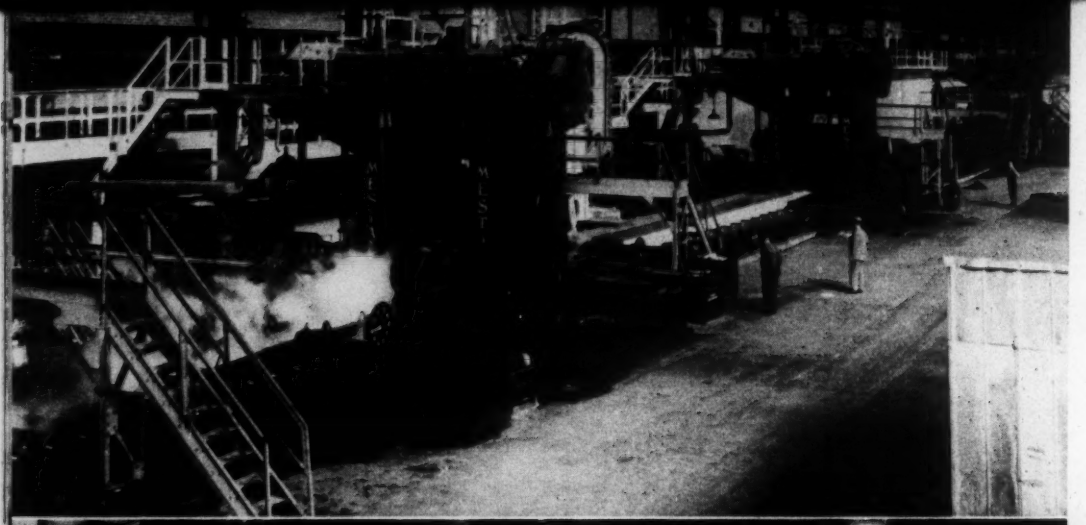
Capacity Still Climbs—Since the close of the war, the industry has poured out another $2 billion for modernization of existing equipment and the addition of new facilities so that ingot capacity today stands at 100.5 million tons and it will climb to 105.7 million by December, 1952.

The trend in the past few years, of course, has been toward the light, flat-rolled products. The industry now accounts for 18 million tons of sheets, 5.7 million tons of strip for black plate and tin plate and 3 million tons of strip for a total of over 26 million tons. It would not be surprising, if the industry could turn out well over 30 million tons of these light products annually in the next few years.

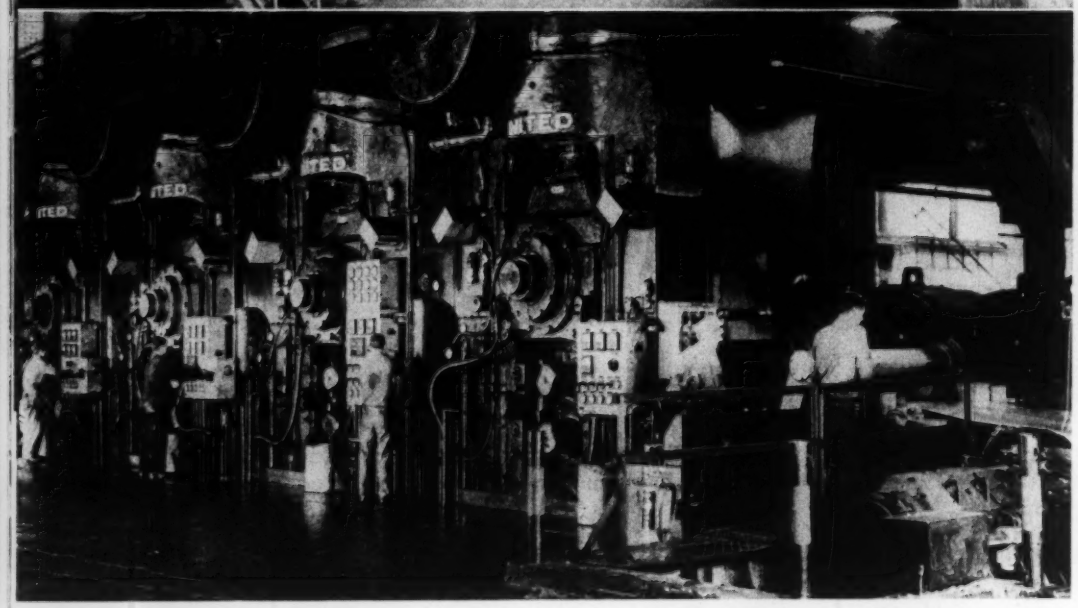
The pressure for sheets and strip eased very little during the "lull" in business in late 1948 and early 1949 and today's demand is reminiscent of early-1947 and 1948. Mills short on ingot capacity again are rolling material shipped in from other shops for conversion and many smaller companies report "unfair" treatment under voluntary allocations.

Conversion Will Come Fast—"If" war comes and "if" the Russians succeed in sinking the U. S. reserve merchant fleet in wholesale lots, consumers of sheets and strip can expect quick reconversion of the continuous strip mills to ship plates.

Future capacity? Except for a short breather, steel consumers have had to tax their ingenuity to get quantities desired. War scare or not, many are coming to believe that the U.S. steel requirements have reached an unanticipated new high plane which promises to be fairly permanent for years to come. More and more, a peg of 115 million tons is heard



Hot-rolled strip and sheet capacity was increased in the U.S. by the addition of this 68-inch continuous hot-strip mill installation placed in operation during the period following World War II



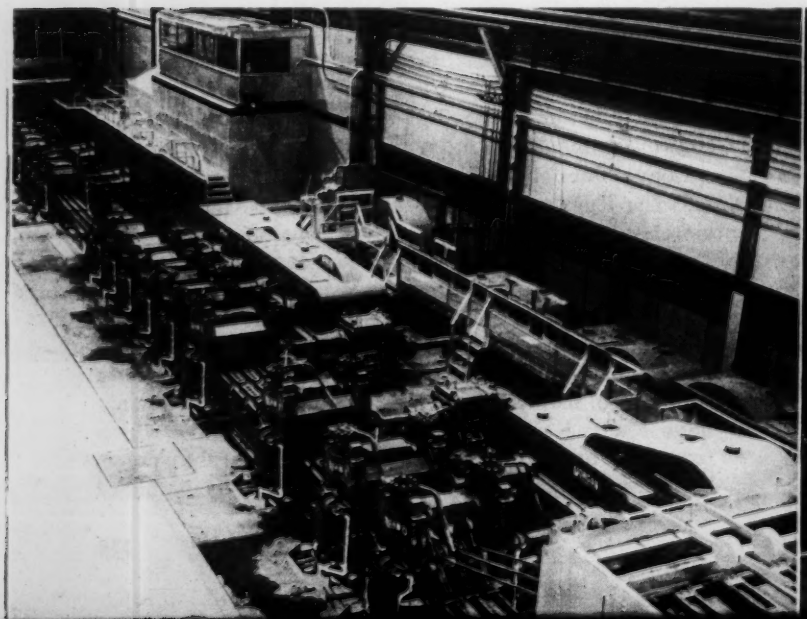
Facilities for cold-reducing hot-rolled coils were greatly expanded during the past six years by installation of many units, typical of which is the high-speed, four-stand tandem mill shown at left

for ingot capacity. It means, possibly, that equipment builders will get another billion or two in new business in the next half decade.

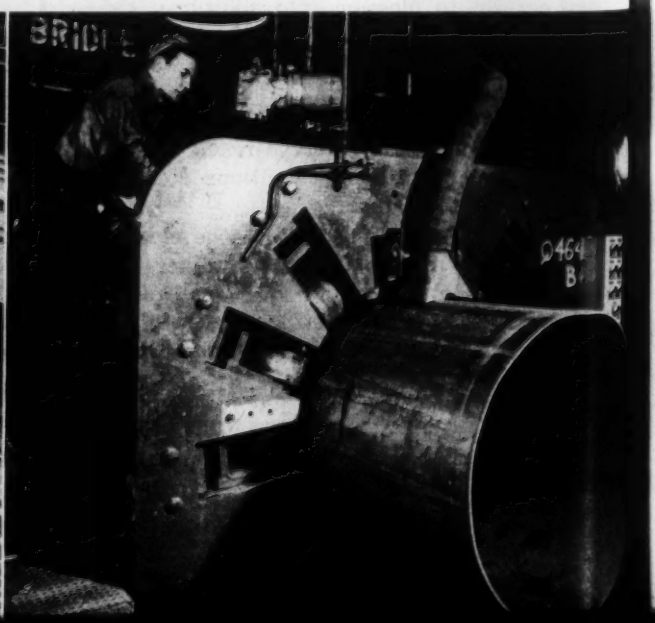
Half of World's Capacity—The United States has approximately half the world's steel producing capacity. Last year this country produced 47 per cent of the global total, even though U. S. steelworks operations averaged only about 81 per cent of capacity.

By comparison, Russia, the second largest producer, is estimated to have no more than 30 million tons of capacity. The United States can melt 3 1/3 tons while the Soviet mills are melting one ton. And this does not take into consideration the 50 million tons of capacity held by probable allies of the United States.

This latest type rod mill installed in the West handles three strands of rod simultaneously through the various roll stands at about 156 miles an hour

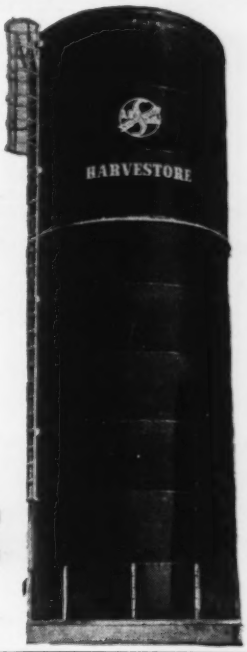


Need for large-diameter pipelines has stimulated plate demand since the war. Here the outside seam of a 30-inch pipe is being electric welded



METAL STAMPINGS

ARE "TOPS" ON THE A.O.Smith HARVESTORE



BIG STAMPED METAL SECTIONS *are glass-surfaced . . . inside and out!*

The top of the HARVESTORE, new mechanically-operated farm silage unit, consists of a number of triangular-shaped, stamped metal sections of approximately 17 sq. ft. each. These sections were accurately formed and punched for closefit assembly . . . carefully formed so that both sides—inside and out—could be glass-surfaced.

QUICK DELIVERY: In addition to exacting specifications there was a critical delivery deadline to meet in order that the finished product would be available at a specified time.

This was a BIG JOB in many ways but the LEAKE organization, trained and equipped to do the *unusual* in metal stampings, performed in near record time.

•

BIG PRESSES FOR BIG JOBS

LEAKE facilities include ample press facilities for any job. The largest is a triple-action hydraulic press, 750-ton ram capacity, 400-ton blankholder, 350-ton 3rd action, bolster area 150-in. x 72-in., daylight opening 94-in., stroke of ram 66-in., equipped with hydro-pneumatic cushion.

INLAND

STEEL USED IN STAMPING THIS PART

• • •

The LEAKE organization appreciates the close cooperation of steel men in making available sheets with metallurgical properties that enable us to accomplish *the unusual in metal stampings.*

THE LEAKE STAMPING COMPANY · MONROE, MICHIGAN

LEAKE

EXPERTS IN PRESSED METAL

COMPLETE PRESSROOM—MACHINE SHOP
HEAT TREAT—BRAZING—WELDING
TESTING AND INSPECTION

Efficiency and Production Developments Keynote Iron and Steel Engineers' Meeting

An opportunity to examine steel industry developments in perspective will be provided those attending this year's Iron and Steel Convention and Exposition. The affair, heralded as the largest in AISE history, will feature many technical papers and over 150 exhibits

TAKE A LOOK at what the future will bring and the past has wrought in the steel industry at next week's convention and exposition of the Association of Iron and Steel Engineers. When the doors of Cleveland's Public Auditorium open, over 150 suppliers of all types of steelmaking equipment will light up their exhibits. The sum total will be the largest exposition ever held by the AISE. With the rap of a gavel the first of 14 technical sessions presenting 46 papers will get under way.

By attending, you will see in perspective the tremendous developments which have taken place in the industry in the last two years. Presented on the theme, "Engineered Efficiency in Steel Plant Improvement," the four-day affair will reveal new developments in products and processes, plus new details on earlier developments.

You will see in action many working models and actual production units, among them a model of a 26-inch electric weld tube mill, actually producing as does its prototype for Youngstown Sheet & Tube Co. The latest in rolling mill equipment, a model high speed cold mill and some small production units will be shown.

With your attendance goes the opportunity of splicing a cable, plus seeing industrial television in actual operation from cameras located in various parts of the exposition. The possibilities of this media in production operations will be discussed in a paper at a technical session on Friday afternoon, Sept. 29.

Coming in for its share of the glory among outstanding developments in the steel industry are the new bessemer, rolling mill and continuous seamless tube facilities of National Tube Co., Lorain, O., a few miles west of Cleveland. Besides being the subject of several of the technical papers, the company and its continuous seamless pipe mill will be the scene of an inspection trip on Wednesday, Sept. 27.

All of the 14 technical sessions will be conveniently held in the same building as the exposition. Regardless of the phase of steelmaking in which you are engaged, you will find papers presented to satisfy your appetite for the latest of information; specific sessions will deal with combustion, electricity, standardization, mechanics, rolling mills, training, lubrication and operating practice.

IRON and STEEL EXPOSITION Hours
Cleveland Public Auditorium

Tuesday, Sept. 26, 10:00 a.m. to 10:00 p.m.
Wednesday, Sept. 27, 10:00 a.m. to 10:00 p.m.
Thursday, Sept. 28, 10:00 a.m. to 5:30 p.m.
Friday, Sept. 29, 10:00 a.m. to 4:00 p.m.

At a general session on Thursday, Sept. 28, you will hear the main address by H. B. Jordan, president, American Steel & Wire Co. T. D. Jolly, vice president of Aluminum Co. of America, will speak on "Engineering and Purchases" and Clifford Strike, president, F. H. McGraw Co., will discuss the "Proposed New England Steel Plant" at this session.

Along with the "miles of aisles" at the exposition and the all-inclusive technical program, several social events have been arranged, all to be held at Hotel Statler. These include an exhibitors' dance on Tuesday evening, Sept. 26, an Old Timers' dinner on Wednesday, Sept. 27 and a formal dinner and dance on Thursday evening, Sept. 28. In addition, a program has been set up for your wives. The ladies' headquarters are in Hotel Statler, where luncheons will be served on Tuesday and Wednesday.

Officers of the Association of Iron and Steel Engineers for 1950 are: A. S. Glossbrenner, vice president, operations, Youngstown Sheet & Tube Co., Youngstown, O., president; John F. Black, assistant general superintendent, Youngstown Sheet & Tube Co., East Chicago, Ind., first vice president; I. N. Tull, electrical superintendent, Republic Steel Corp., Cleveland, second vice president; John L. Young, vice president in charge of engineering, National Tube Co., Pittsburgh, treasurer; Eric L. Anderson, electrical superintendent, Bethlehem Steel Co., Johnstown, Pa., secretary.

PROGRAM

1950 AISE Convention and Iron and Steel Exposition, Cleveland

Exposition and Technical Sessions in Cleveland Public Auditorium. Social Functions at Hotel Statler

TUESDAY, SEPTEMBER 26

9:00 a. m.—REGISTRATION—Main Lobby

9:00 a. m.—LADIES REGISTRATION AND HEADQUARTERS—Hotel Statler

9:15 a. m.—BUSINESS MEETING—Ball Room
Conducted by President A. S. Glossbrenner

9:30 a. m.—COMBUSTION SESSION—Club Room B
Chairmen: Edwin C. McDonald, combustion engineer, Republic Steel Corp., Corrigan McKinney Works, Cleveland, O.
C. E. Duffy, fuel engineer, Bethlehem Steel Co., Sparrows Point, Md.
"The Use of the Jet Mill for Combustion Purposes and for Fine Grinding of Various Materials," by G. M. Croft, manager, fuel equipment dept., Blaw Knox Co., Pittsburgh, Pa.
"Dust, Fume and Smoke Suppression," by Aubrey J. Grindle, vice president and consulting engineer, Whiting Corp., Harvey, Ill.
"Reduction of Hanging and Slipping in Blast Furnaces by Automatic Control," by Otto J. Leone, engineer, West Newton, Pa.

9.30 a. m.—ELECTRICAL SESSION—Ball Room
Chairmen: J. H. Franz, superintendent, fabricating shops, Carnegie-Illinois Steel Corp., McDonald Works, Youngstown, O.
R. J. Beeswy, assistant superintendent, electric power and steam dept., Inland Steel Co., East Chicago, Ind.
"Electroplating Rectifiers," by L. W. Reinken, chief engineer, W. Green Electric Co., New York, N. Y.
"Preventive Maintenance of Electric Overhead Cranes," by H. C. Mullings, assistant superintendent, maintenance, Electric Division, Jones & Laughlin Steel Corp., Pittsburgh, Pa.
"Low Inertia D-C Motors for Rolling Mill Drives," by J. Henry Schneider, section engineer, DC machines, Elliott Co., Ridgway, Pa.

12:00 noon—LADIES LUNCHEON
Meet at Ladies Headquarters

2:00 p. m.—STANDARDIZATION SESSION — Ball Room
Chairmen: L. J. Gould, chief engineer of construction, Bethlehem Steel Co., Bethlehem, Pa.
Eric Anderson, electrical superintendent, Bethlehem Steel Co., Johnstown, Pa.
"Standardization Report," by L. J. Gould, chairman, AISE standardization committee
"Report on Mill Motor Standardization," by M. B. Antrim, chairman, AISE mill motor committee
"Progress Report of Carbon Brush Standardization," by E. L. Anderson, chairman, AISE carbon brush standardization committee
"Recommended Plain Bearing Design Practice," by C. E. Pritchard, chairman, AISE plain bearing committee
"Progress Report on Wiring Standardization," by J. E. Bodoh and C. G. Dimitt, co-chairman, AISE wiring committee
"A Proposed Specification for Hot Metal Ladles," by B. G. Johnston, Fritz Engineering Laboratory, Lehigh University, Bethlehem, Pa.

2:00 p. m.—MECHANICAL SESSION—Club Room B
Chairman: J. J. Healy, project engineer, Armco Steel Corp., Middletown, O.

A. S. GLOSSBRENNER
1950 President, AISE

JOHN F. BLACK
1950 1st Vice President, AISE

P. L. Walter, superintendent mechanical dept., Republic Steel Corp., Canton, O.
"Rolls for Centering and Aligning Materials," by E. T. Lorig, chief-senior staff engineering bureau, Carnegie-Illinois Steel Corp., Pittsburgh, Pa.
"New Facilities for Stocking and Shipping of Pipe at Lorain Works of National Tube Co.," by C. Clarke Wales, chief project engineer, National Tube Co., Lorain, O.
"Some Aspects of Selecting and Applying Gears for Rolling Mill Equipment," by Edward C. Denne, consultant and manager of gear dept., United Engineering & Foundry Co., Pittsburgh, Pa.

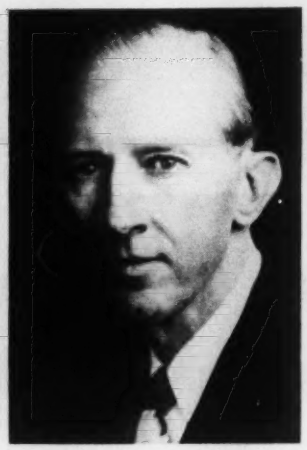
10:00 p. m.—EXHIBITORS DANCE—Euclid Ball Room, Hotel Statler

WEDNESDAY, SEPTEMBER 27

9:00 a. m.—ROLLING MILL SESSION—Club Room B
Chairmen: D. W. Lloyd, general superintendent, Youngstown Sheet & Tube Co., Youngstown, O.
C. P. Hammond, superintendent, rolling mills, Rotary Electric Steel Co., Detroit, Mich.
"Design and Use of Tungsten Carbide Rolls for Cold Rolling Metals," by R. T. Beeghly, vice president and general manager, Metal Carbides Corp., Youngstown, O.
"The Continuous Seamless Pipe Mill," by John L. Young, vice president-engineering, National Tube Co., Pittsburgh, Pa.
"Rolling of Tool Steels," by H. C. Bigge, superintendent, Tool Steel Division, Bethlehem Steel Co., Bethlehem, Pa.

9:00 a. m.—ELECTRICAL SESSION—Ball Room
Chairmen: K. L. Johannsen, superintendent, assigned and operating maintenance, Carnegie-Illinois Steel Corp., Duquesne, Pa.
R. W. Graham, superintendent, electrical department, Bethlehem Steel Co., Lackawanna, N. Y.
"Transformer Oils in the Steel Plant," by John F. Boal, lubrication engineer, Carnegie-Illinois Steel Corp., Homestead, Pa.
"Requirements for a Modern Steel Mill Distribution System," by F. H. Wickline, construction electrical engineer, National Tube Co., Lorain, O.
"Grounding Practice of the Inland Steel Co.," by V. E. Schlossberg, superintendent, electric power and steam departments, Inland Steel Co., East Chicago, Ind.

I. N. TULL
1950 2nd Vice President, AISE



JOHN L. YOUNG
1950 Treasurer, AISE

1:00 p. m.—INSPECTION TRIP—National Tube Co., Lorain, O.

6:00 p. m.—OLD TIMERS' DINNER

THURSDAY, SEPTEMBER 28

9:00 a. m.—TRAINING SESSION—Ball Room

Chairmen: I. N. Tull electrical superintendent, Republic Steel Corp., Cleveland, O.
John H. Vohr, general superintendent, Carnegie-Illinois Steel Corp., Gary Works, Gary, Ind.

"Supervisory Development," by A. C. Croft, president, National Foremen's Institute Inc., New London, Conn.

"The Bethlehem Loop Course," by H. C. Houghton, assistant to manager of personnel, Bethlehem Steel Co., Bethlehem, Pa.

"Motor Inspection Training Program," by George Kennedy, Carnegie-Illinois Steel Corp., Pittsburgh, Pa.

9:00 a. m.—LUBRICATION SESSION—Club Room A

Chairmen: W. M. Schuck, lubrication engineer, Armco Steel Corp., Middletown, O.
R. A. Kraus, general mechanical foreman, Republic Steel Corp., Chicago, Ill.

"What to Look for In Hydraulic Fluids," by Anthony J. Zino Jr., assistant sales manager, Industrial Division, Swan-Finch Oil Corp., New York, N. Y.

"Rolling Solutions for Specialty Steels," by Maxwell L. Bible, general foreman, Cold Reduction Division, Crucible Steel Co. of America, Midland, Pa.

"Metal Drawing Lubricants for Wire, Tubing and Sheet Steel," by Walter A. Smigel, general manager, and H. Grey Verner, director of research, R. H. Miller Co. Inc., Homer, N. Y.

9:00 a. m.—COMBUSTION SESSION—Club Room B

Chairmen: R. A. Lambert, superintendent, steam and combustion, Jones & Laughlin Steel Corp., Pittsburgh, Pa.
E. T. W. Bailey, chief combustion engineer, Steel Co. of Canada Ltd., Hamilton, Ont.

"The Public Demands Better Combustion," by L. T. White, director, business research, Cities Service Oil Co., New York, N. Y.

"Application of the Heat Prover to the Steel Industry," by Joe G. Sparks, Cities Service Oil Co., Chicago, Ill.

"Economics of a 500-Ton Open Hearth Furnace," by Walter W. Kompart, combustion and hydraulic engineer, Weirton Steel Co., Weirton, W. Va.

"Oxygen for the Open Hearth—Its Storage and Distribution," by R. Tietig Jr. and B. P. Sarasin, engineers, A. J. Boynton & Co., Chicago, Ill.

2:00 p. m—GENERAL SESSION—Ball Room

Chairmen: A. S. Glossbrenner, vice president operations, Youngstown Sheet & Tube Co., Youngstown, O.

An address by H. B. Jordan, president, American Steel & Wire Co., Cleveland, O.

"Engineering and Purchases," by Thomas D. Jolly, vice president—engineering and purchases, Aluminum Co. of America, Pittsburgh, Pa.

"Proposed New England Steel Plant," by Clifford S. Strike, president, F. H. McGraw & Co., New York, N. Y.

7:00 p. m.—FORMAL DINNER AND DANCE—Grand Ball Room, Hotel Statler

FRIDAY, SEPTEMBER 29

9:00 a. m.—OPERATING PRACTICE SESSION—Club Room B

Chairmen: W. H. Collison, superintendent of coke plant, Great Lakes Steel Corp., Ecorse, Mich.
Paul E. Thomas, assistant to general superintendent, Carnegie-Illinois Steel Corp., Gary, Ind.

"Density Control of Coal Charged in Coke Ovens," by C. W. Stahl, engineer, coal and coke chemical research, Bethlehem Steel Co., Bethlehem, Pa. and J. K. Kurtz, coke oven superintendent, Bethlehem Steel Co., Sparrows Point, Md.

"Use of a Fuel Oil as an Absorption Oil in Recovery of Light Oil from Coke Oven Gas," by C. R. Montgomery, chief chemist, By-Product Coke Dept., Pittsburgh Steel Co., Pittsburgh, Pa.

"Blast Furnace Hearth Cooling," by Owen R. Rice, Freyn Engineering Co., Chicago, Ill.

9:00 a. m.—ELECTRICAL SESSION—Ball Room

Chairmen: W. J. Tunny, superintendent, electrical maintenance, Youngstown Sheet & Tube Co., East Chicago, Ind.
Malcolm B. Antrim, superintendent, electrical maintenance, Lukens Steel Co., Coatesville, Pa.

"Temper Rolling with Modern Control," by J. F. Sellers, engineer-in-charge of DC design, R. M. Peeples, engineer, and A. C. Halter, engineer, control section, engineering dept., Allis-Chalmers Mfg. Co., Milwaukee, Wis.

"Temper Mill Power Requirements," by William P. Smith, Industrial Engineering Divisions, General Electric Co., Schenectady, N. Y., and J. E. Butler, electrical engineer, Weirton Steel Co., Weirton, W. Va.

"Acceleration Characteristics of Tandem Cold Reduction Mills," by W. R. Harris, manager, metal working section, industry engineering department and R. W. Moore, steel mill engineer, industry engineering dept., Westinghouse Electric Corp., East Pittsburgh, Pa.

2:00 p. m.—LUBRICATION SESSION—Club Room B

Chairmen: D. E. Whitehead, general lubrication engineer, Crucible Steel Co. of America, Pittsburgh, Pa.
N. I. Whiteley, lubrication engineer, American Steel and Wire Co., Cleveland, O.

"Graphite as a Lubricant," by E. S. Glauch, mechanical engineer, Joseph Dixon Crucible Co., Jersey City, N. J.

"Extreme Pressure Lubricants," by James H. Lewis, lubrication engineer, Carnegie-Illinois Steel Corp., Clairton, Pa.

"Laboratory Screening of All-Purpose Type Greases for Plant Performance Testing," by E. M. Kipp, chief and C. A. Zeiler, research engineer, Lubricants Division, Aluminum Research Laboratories, Aluminum Co. of America, New Kensington, Pa.

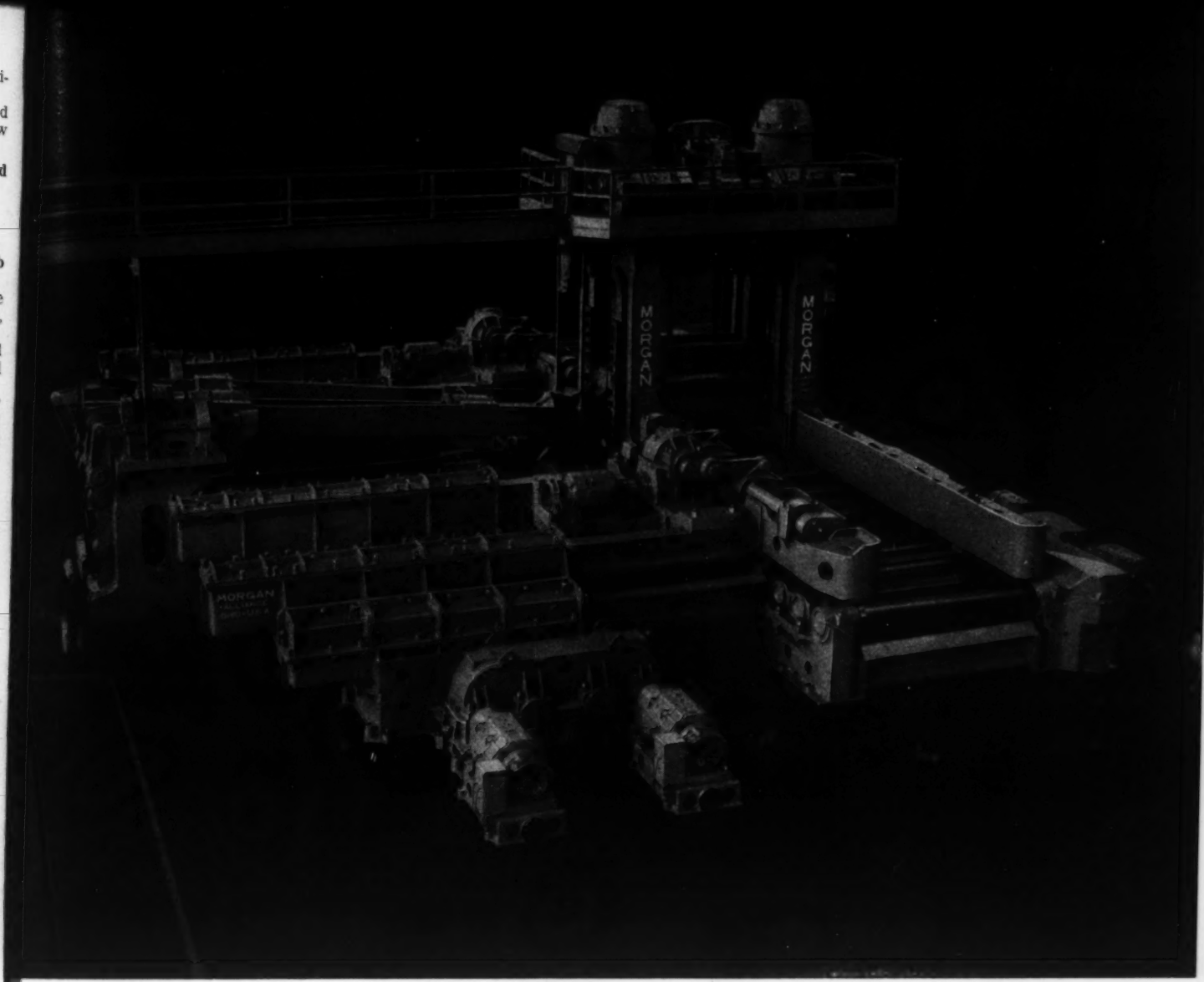
2:00 p. m.—OPERATING PRACTICE SESSION—Ball Room

Chairmen: G. C. Brainard Jr., assistant superintendent, cold strip mill, Youngstown Sheet & Tube Co., Youngstown, O.
P. E. Haglund, superintendent, raw materials and semifinished, Ford Motor Co., Dearborn, Mich.

"Analyzing Open Hearth Data—Statistics vs. Opinion," by Wade R. Weaver, director, steel conservation and quality control, Republic Steel Corp., Cleveland, O.

"Centerless Turning of Bars, Billets and Tubes," by Walter Siegerist, president, Medart Co., St. Louis, Mo.

"Television in Industry," by J. A. Good, manager, electronics dept., Diamond Power Specialty Corp., Lancaster, O.



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Pump Maintenance Cut

Pump service and exchange plan made possible through new design and standardization

ANY piece of machinery, pumps included, is subject to wear. If it takes time, tools and skill to tear down a pump to replace individual bearings, wearing rings, etc., why is it not practical to design a pump in which every working part, and every part subject to wear is in one easily removed rotor assembly?

Design Fits Plan—DeLaval Steam Turbine Co., Trenton, N. J., asked itself this question, received an affirmative answer, and proceeded to design the type GS pump to fit the new idea of a service and exchange plan.

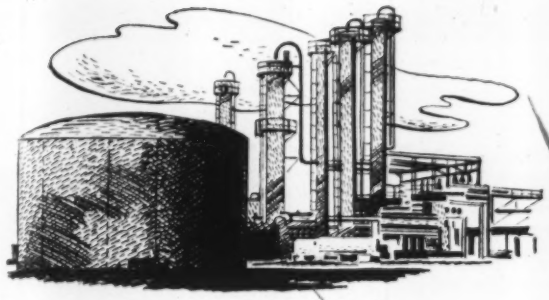
All parts, with the exception of the bare pump casing, are contained in the rotor assembly. When maintenance becomes necessary, the top cover and end plate studs are removed, the assembly is lifted out and a new one put in place.

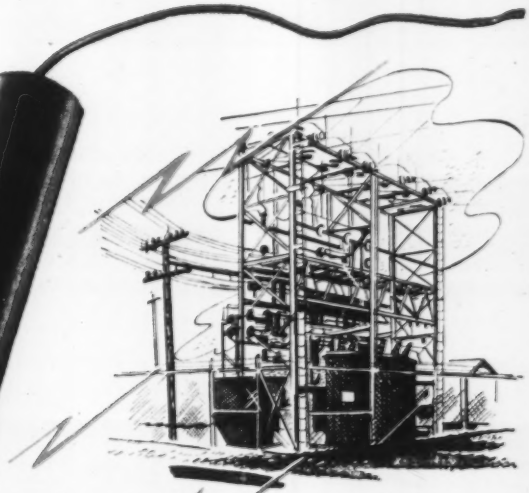
Through a plan set up by the company, new rotors are available for immediate shipment from factory stock. The old rotor is returned and credit given for all serviceable parts. As an alternate, the entire pump may be exchanged for a factory rebuilt pump, again with credit allowed for serviceable parts.

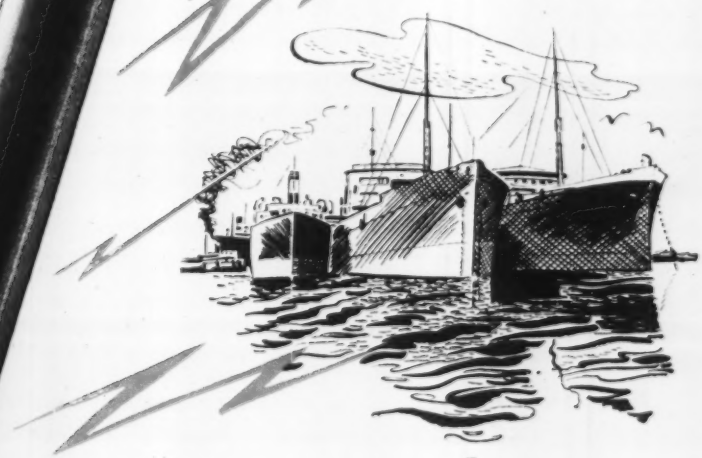
Maintain Your Own?—Many users have a considerable number of pumps and for this reason maintain their own repair shops and carry a stock of spare parts. The new type of pump is said to fit into this type of operation. The casing is split horizontally for easy access without breaking piping connections. All parts are interchangeable and available for immediate shipment from factory stock, it is reported by the company.

Periodic lubrication and the occasional repacking of a stuffing box—other time-consuming maintenance expenses—are said to be eliminated by the new design; mechanical seals and prelubricated bearings make it relatively maintenance-free.

Variety of Metals—Built in three sizes for capacities to 450 gallons per minute and heads to 230 feet, the pumps utilize cast iron in the pump case and cover, while making use of stainless steel for the shaft and cast bronze for the pump impeller. The two end covers are so designed that they act as a guide for the liquid pumped to enter the impeller smoothly, as an enclosure and support for the mechanical seal and as a housing for the bearings.







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NO METAL CAN TO LEAK OR CORRODE

How To Choose Blast Furnace Refractories

Carbon hearth linings are now being studied in this country to determine correct installation procedure. Reasons for failure of refractories used in hot blast mains, bustle pipe, downcomers and hot blast stoves are explained and suitable grades of brick for these appurtenances recommended

PART III

By R. P. HEUER
Vice President
and
C. E. GRIGSBY
Service Research Engineer
General Refractories Co.
Philadelphia

CARBON has many potential advantages as a blast furnace refractory. It is highly refractory, chemically inert to metal and slag, has marked volume stability, low, uniform thermal expansion, and high thermal conductivity. It is also believed highly resistant to abrasion at high temperatures and its permeability is usually well below that of fireclay brick.

Although it is not wet by molten iron, carbon has been found impregnated with iron in service in America. British research indicates that iron-filled carbon can be disintegrated by carbon monoxide. The chief fault of all forms of carbon, and the one that prevents its being the "perfect" refractory, is that it is highly vulnerable to oxidation. It burns rapidly above red heat when in contact with oxygen from air, moisture, carbon dioxide, or other sources. Success or failure of carbon above red heat depends largely on how well it is held in position and protected from available oxygen.

Carbon Hearths — In 1945 — after 60 years of development — about 85 per cent of the iron in Germany was made in blast furnaces having some form of carbon in the hearth or bosh, or both. The successful design of keyed-in machined, blocks laid dry, is shown in Fig. 8. The German carbon, made of rammed coke, was much finer grained and stronger, but more porous and less volume stable than American carbon.

The English have used carbon in hearths of several designs, including inverted domes and horizontal hearths laid with tongue and groove blocks. In all cases they have taken precautions against floating, oxidation, and breakouts. The latest tongue and groove carbon block hearth was still satisfactory early in 1950, according to J. H. Chesters, United Steel Companies Ltd.

Several all-carbon boshes and one 15 foot stack trial showed little or no wear after several years service. Two all-carbon furnaces, blown-in in 1949, were running well early in 1950 but it was too early to draw any definite conclusions, Mr. Chester said.

The English plan to continue their extensive use of carbon. English carbon, made of rammed coke, is much finer grained, slightly more porous, much stronger and lower in conductivity than American carbon.

During World War II, carbon re-

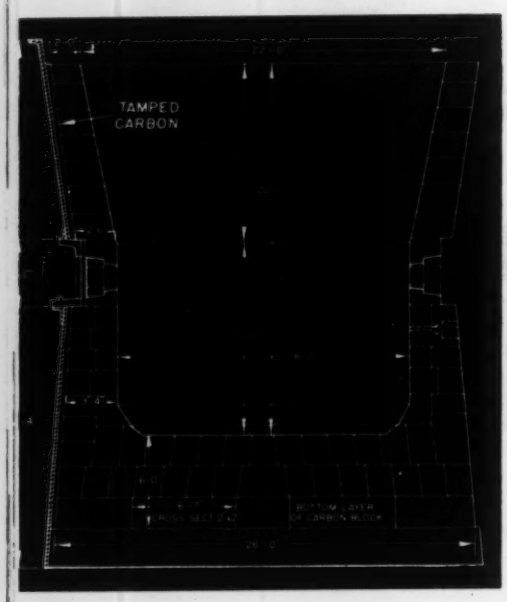

Fig. 8—Section of hearth and bosh of German stack showing machined carbon block installation in hearth

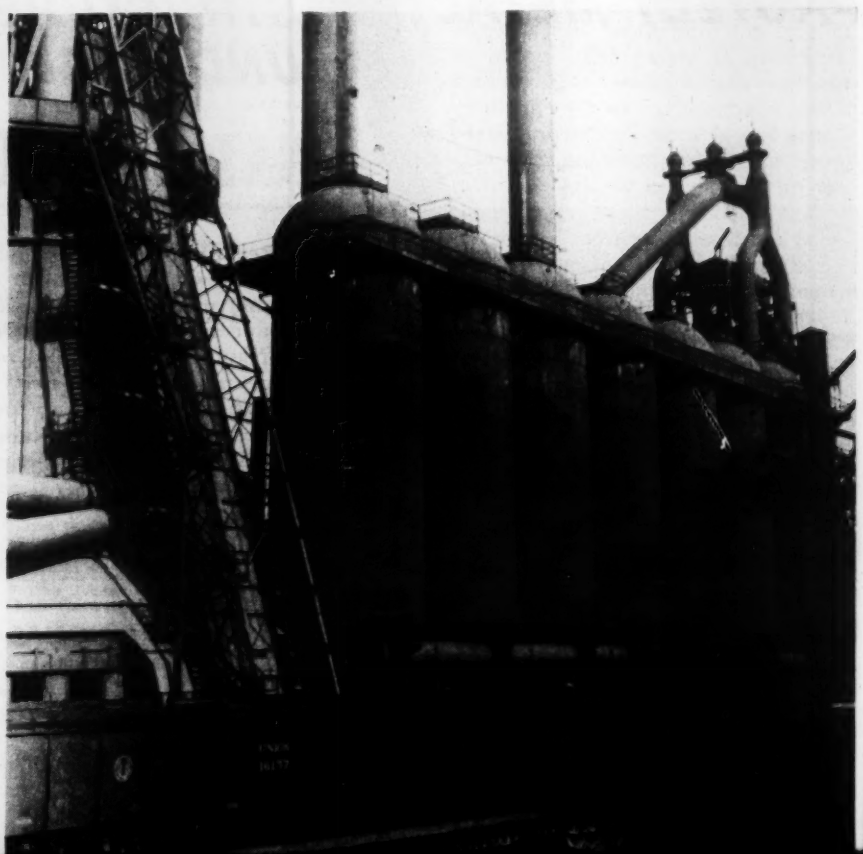

Fig. 9—Heated air for two blast furnaces is supplied by seven 2-pass stoves lined with many thousand fireclay brick

There are only 1500 square feet of floor space in these two self-contained canteens.

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ceived much favorable publicity as a possible remedy for salamander formation and breakouts. From late 1944 until early 1949, American operators installed about 80 carbon hearth linings at a cost of about $3,000,000. Despite the use of an untried type of carbon in untried designs, there were many extremely favorable reports on carbon during the first few years. The British, however, discarded the American cantilever construction, after calculating that flotation stresses, resulting from the large difference in specific gravities of iron and carbon, left little or no margin of safety—even with British carbon which is two to five times as strong as American carbon.

The double wall design used in most American hearths comprises two courses of large blocks forming a layer 45 inches thick, atop fireclay hearth blocks. Crucible walls consist of two concentric walls of large carbon blocks. Other hearths utilized the single wall design, consisting of a heavy inner lining of carbon backed up by fireclay brick. In both designs, joints 2 to 3 inches thick between blocks are filled with rammed carbon paste.

American carbon, made of extruded, calcined, anthracite coal and tar, is much coarser than the German and British carbon. It is denser, less porous, much higher in thermal conductivity, and more volume stable than British carbon. It also has much lower strength.

Effect of Design—In the last two or three years, a series of breakouts has occurred in American furnaces with carbon hearths. Today, carbon installations have been suspended by most major U. S. steel companies. There is a rather general feeling that the design has been the major cause of the trouble, but that the thickness of carbon has also been only about one-third to one-half of what it should have been with high conductivity American carbon.

The cause of this reassessment of carbon has been the observations made on more than a dozen used carbon hearths since late 1948. Three of these had suffered iron breakouts. There was direct evidence that from one to all of these carbon blocks, in the hearths examined, had sheared and floated. In all cases, the carbon in the taphole area was worn—presumably from oxidation—the severity of erosion varying directly with furnace tonnage. There was no direct evidence of carbon solution by the iron. In every case where fireclay brick below the carbon could be examined, they were vitrified and compressed. In all such cases infiltrated iron was also found. It has been calculated that at least 72 inches of even the low conductivity British carbon would be needed to eliminate these troubles.

Hearth walls were usually intact, but in the taphole area, and elsewhere, it was observed that the carbon blocks had "rotted" or "softened", apparently because of increased oxidation of bond carbon. In one case, a few inches of carbon on the bottom row of a double layer hearth had been replaced by iron. Sidewall and hearth blocks of both single and double wall design were impregnated by iron.

Present Status — As a result of these examinations, most plants have decided that resumption of carbon, for this use, is dependent upon satisfactory solutions to certain fundamental problems.

These involve the properties of the carbon used, its behavior in service, and the design. Answers to these questions will be sought by a sponsored research program of the American Iron and Steel Institute. Most operators will use no more carbon until this research indicates the type to be used and how to use it.

A few operators are still making experiments with carbon incorporating major changes in design. Others are considering such experiments. Still others are considering trials of high strength carbon made of petroleum or metallurgical coke for carbon walls 1 foot to 2 feet thick, tightly abutted against water-cooled staves from the bottom of the hearth to the tuyeres.

Great majority of furnacemen, however, have adopted a "wait and see" attitude on carbon. Until further information is available, they will use high-fired fireclay brick, sillimanite pads and brick, and other improved high alumina refractories for hearth construction.

Pipes for Conducting Gases — Refractory-lined steel bustle pipes, hot blast mains and downcomers perform the taken-for-granted, but essential, function of conducting hot gases in the furnace area. They present no difficult refractory problems, and fireclay brick are generally used.

Bustle pipe brick are subjected chiefly to abrasion from dust carried in the red hot (800-1500° F), high-pressure air, moving at high velocity through the pipe encircling the fur-

Fig. 10—Peeled high-duty fireclay brick in dome of stove after about 1,770,000 net tons of iron were cast from furnace

Fig. 11—Peeled pieces of high-duty fireclay brick from stove dome (shown in Fig. 10) clogging upper checkerwork of stove

nace. Conditions in the hot blast mains are much like those in the bustle pipe, except that the abrasion at sharp turns is much more severe. In downcomers, refractories must resist the abrasive action of dust in the fast-moving furnace exhaust gases at about 400° F. Wear from abrasion may be minimized by increasing the downcomer cross sectional area.

Dense, hard, intermediate or high-duty fireclay brick are generally used in bustle pipes and hot blast mains to resist the abrasion. Silicon carbide brick, used at the turns in one hot blast main, were still in service after about 20 years. In downcomers, dense, hard fireclay brick of low or intermediate duty grade are commonly used. Cast-iron lining is sometimes used at the junction of uptake and downtake pipes.

Hot Blast Stoves—These slim, refractory-lined, vertical steel cylinders about 100 x 25 feet, (Fig. 9) are capped by a dome and filled with checker brick. Three to five of them, working as a relay team, take turns in furnishing a continuous supply of preheated air to one blast furnace. Lacking any of the intriguing feeding and tapping operations which glamorize the furnace they serve, these unromantic-looking regenerators serve the important function of increasing the efficiency of their mistress, increasing her output and reducing the cost of the iron she produces.

A typical, modern 1500-ton blast furnace is equipped with three stoves, using a total of 1,900,000 to 1,950,000 nine-inch equivalents of refractories. These are valued at about $200,000 to $300,000, depending upon the design of checkers. These refractories, like those in the furnace, are expected to last for many years, during which many millions of tons of iron are produced.

Service Conditions — In the lower walls of the combustion chamber or "well," the brick must resist high load and some alkalies at temperatures up to 2600° F. The many thousands of small temperature changes to which they are subjected may, in time, cause spalling of regular high-duty fireclay brick.

In the upper well walls and the dome, brick must withstand conditions slightly less severe, but otherwise much the same as those in the lower well walls. Dome brick are likely to spall from a combination of nephelite ($Na_2O{\cdot}Al_2O_3{\cdot}2Si_2O$) peeling and thermal shock on their vitrified structure, as shown in Fig. 10.

When this happens, the spalls may almost completely clog top checker openings, as shown in Fig. 11.

Checker brick (Fig. 12), must be dense to give the high thermal capacity and conductivity required to insure rapid absorption of large quantities of heat from the combustion gases, and the subsequent release of the heat to the air blown through the stove to be preheated. In the top 10 to 20 feet of checkers, temperatures up to 2600° F. with moderate load and some alkali attack may be encountered in stoves not equipped with appropriate pyrometers. Despite their high density, top checker brick must not spall during thousands of cycles of fairly large, rapid changes in temperature. They must also be highly volume stable to avoid deformation, such as that shown in Fig. 13.

Clockwise Spiral Theory — For many years observers in the northern hemisphere, looking down into the flues of stove checker brick which have shrunk or deformed, have noted the tendency of vertical flues to spiral in a clockwise direction from bottom to top of the stove. This characteristic is similar to the clockwise spiraling of water above the drain of a basin, and is believed due to the same cause, viz: the counterclockwise rotation of the earth north of the equator. According to this theory, the spiral effect is due to the tendency of the top section of the stove to lag behind the bottom which is following the earth; therefore, the spiral would be expected to be counterclockwise in the southern hemisphere.

The section of checkers below the top 10 to 20 feet is at a lower temperature, and temperature changes are smaller, but the brick are under much greater load. The lowest checkers are under great load, but since temperatures are only 300 to 400° F, conditions are not severe. In the stove walls, brick must resist conditions resembling those of checkers at corresponding levels, but much less severe because the brick are not entirely surrounded by heat.

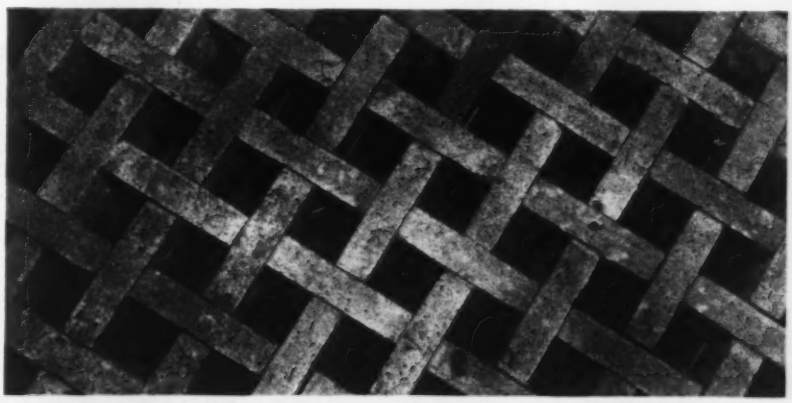

Fig. 12—Basketweave setting of high-duty fireclay checkers in modern hot blast stove

Fig. 13—Basketweave setting of fireclay stove checkers which have pulled away from combustion chamber wall after two campaigns totaling 10 years and 2,600,000 net tons of iron

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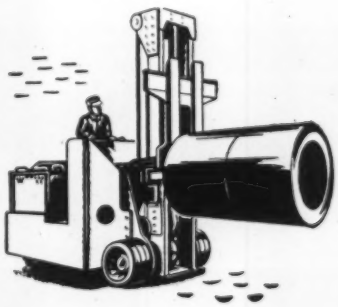

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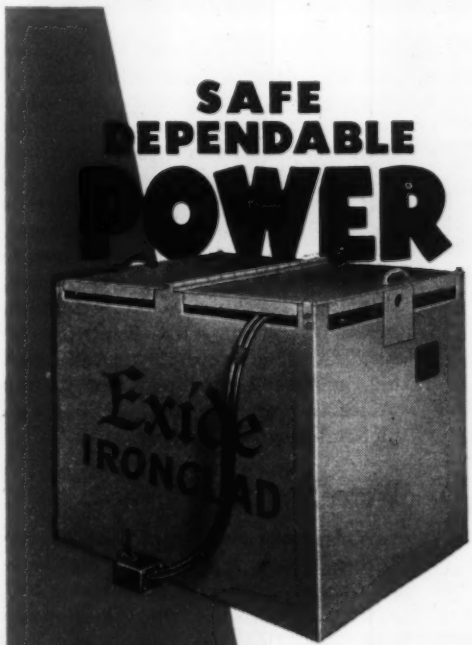
You profit, too, from the savings they provide—low cost power, amounting to less than 5 cents per hour to recharge; and low cost maintenance, seldom more than 15 cents per shift.

Since 1910, on more than 100,000 heavy-duty jobs, the Exide-Ironclad Battery has proved to be the best power buy . . . *at any price.*

For long, dependable service, at a saving, equip your battery electric trucks with Exide-Ironclads. Write for more facts and FREE copy of Exide-Ironclad Topics. It contains latest developments in materials handling . . . shows actual case histories.



THE ELECTRIC STORAGE BATTERY CO.
Philadelphia 32
Exide Batteries of Canada, Limited, Toronto

1888 . . . DEPENDABLE BATTERIES FOR 62 YEARS . . . 1950

"Exide-Ironclad" *Reg. Trade-mark U.S. Pat. Off.*

Fig. 14—Stove checkers after two 1,000,000-ton campaigns. Checkers have shifted away from combustion chamber wall crushing those on opposite side of stove

Stove Linings — Dense, high conductivity high-duty fireclay brick of good workmanship may be used for the entire stove lining and all the checkers, for most stoves. In some cases, the temperatures and loads are too great for such brick in combustion well walls, domes and the upper parts of the checker setting.

Super-duty fireclay brick are often used for combustion zone inner linings, the dome, and the top 10 to 20 feet of checkers, where service conditions are too severe for high-duty fireclay brick. Where high-duty fireclay checkers settle, and shift away from well walls, collapsing and crushing the checkers on the opposite side (see Fig. 14), super-duty fireclay brick will give much better service.

Silicious fireclay brick, commonly called Jersey brick or semisilica brick, are sometimes used where high temperatures and excessive loads are encountered in domes and inner combustion chamber walls, because they resist load even better than super-duty fireclay brick, up to 2500° F or above. They take a glaze and expand slightly, forming a monolithic wall. They also resist spalling very well, usually proving superior to high-duty fireclay brick (which often spall badly in these locations). These brick also perform well as checker brick immediately below a 10 to 20 foot layer of super-duty fireclay brick, which sometimes deform when carried below 20 feet.

Hi-Fired Brick Suggested—Hi-fired (cone 18) high-duty fireclay brick are dense, strong, load-resistant brick which will soon be tried in all sections of stoves where conditions are severe. They have excellent resistance to attack by alkalies—a frequent cause of failure in domes and checkers. They are much more resistant to load and to shrinkage than high-duty fireclay stove brick. They resist spalling well and are comparable to hi-fired super-duty fireclay brick on deformation under load. Thus they are well suited for use in combustion well walls and domes. They are also being considered for the top quarter of the checker setting, where they are expected to reduce slag corrosion and peeling from formation of nephelite, because of their low porosity and high mechanical strength.

Although no stoves have yet been built with these brick, such trials will be made in the near future. Despite their higher first cost, it is expected that the cone 18 high-duty brick will increase stove life and efficiency, decrease stove maintenance and help reduce total cost per ton of iron.

Aluminum Analyzed

Best procedures for chemically analyzing aluminum and its alloys are given in detail in a manual, Chemical Analysis of Aluminum, published by Aluminum Co. of America, Pittsburgh. Now in its third edition, it contains many methods developed and standardized by the company's analytical chemists. The manual represents the official practice of the company.

Procedures are given for the determination of 40 elements, each determination being outlined as to its principle, required apparatus, reagents and laboratory procedure. Paper covered and wire bound, the 1950 edition of this book contains 150 pages.

Soldering Techniques

Instructions are given for the proper use of the three types of solder—soft, precious metal and common brazing—for joints of the required strength, in a circular, "Solders and Soldering" available from U. S. Government Printing Office, Washington, D. C. Compiled by National Bureau of Standards, the publication discusses selection of fluxes, besides listing all common soldering alloys and their components, together with their melting ranges. Illustrations of different types of soldered joints are shown and types of soldering equipment are described and illustrated.

Heater Uses Metal Sandwich

Processing high heat conductivity and durable, easy to clean surfaces is the Rosslyn metal being applied to strip type electric heating elements by Wesix Electric Heater Co., San Francisco. Actually a sandwich of copper core and stainless steel surfaces, the metal, made by American Cladmetals Co., Carnegie, Pa., is formed into a metal sheet to completely enclose the heating element.

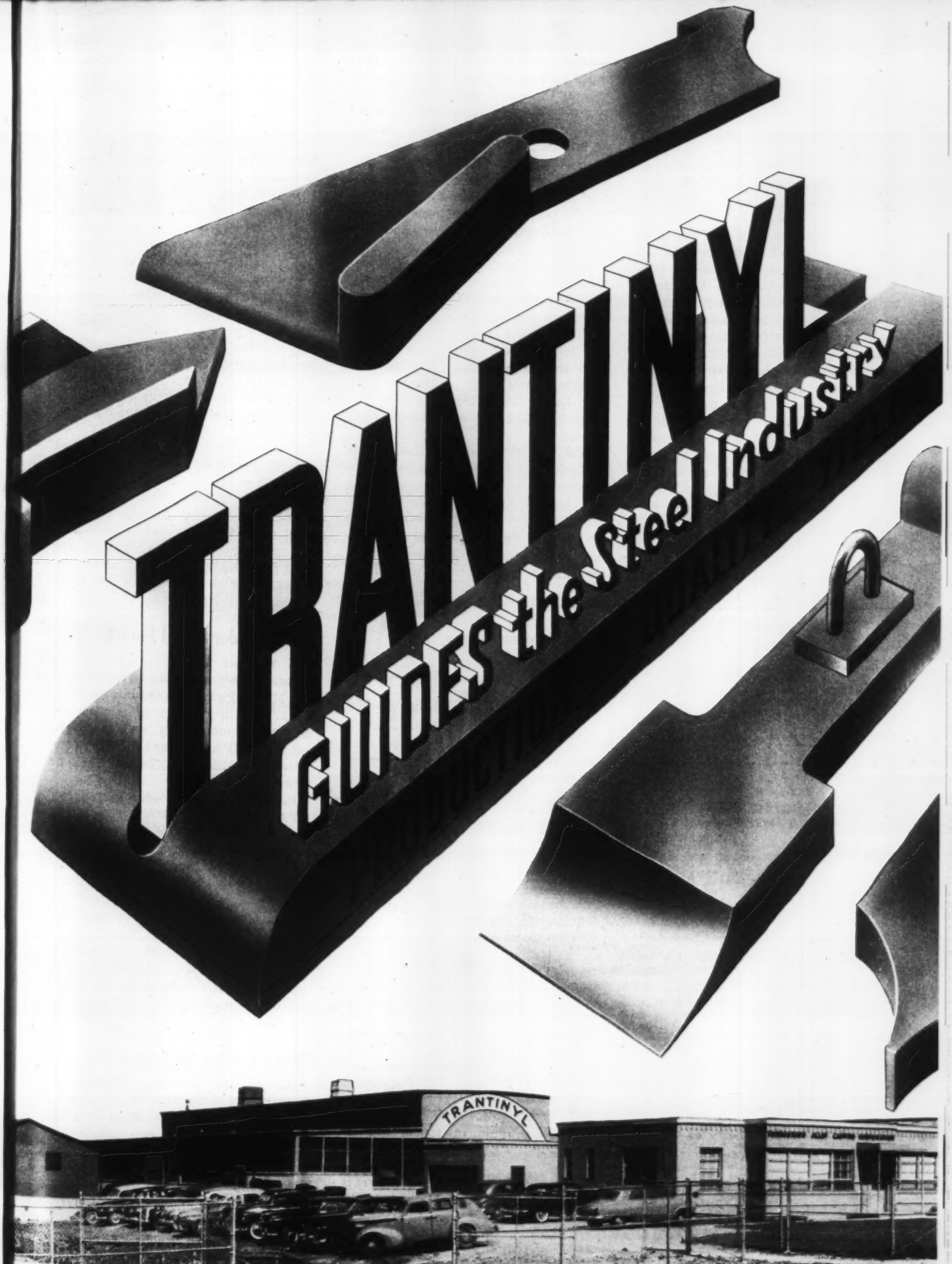
Book of ASTM Standards

Because of the continuing growth in the number and volume of standards of the American Society for Testing Materials, a 1949 book of standards is published in six parts. It includes over 8000 pages and more than 1550 standards, specifications, tests and definitions for materials.

It is divided as follows: Ferrous metals; nonferrous metals; cement, concrete, ceramics, thermal insulation, etc.; paint, naval stores, wood, shipping containers, etc.; textiles, fuels, petroleum, etc.; electrical insulation, plastics, rubber. Each part has a detailed subject index, two tables of contents and will be supplemented later this year.

Water Services Described

Water procurement, treatment, usage and disposal engineering services offered by Hall Laboratories Inc., Pittsburgh, are described in a booklet, "Let's Consider Your Whole Water Problem". Organization of the company's technical staff is described. Typical service problems are discussed and illustrations show flow schemes of water in process and disposal.



YOUNGSTOWN ALLOY CASTING CORP., Youngstown, Ohi

What's Ahead in Steelmaking

(*Concluded from Page* 113)

of rolls. Reduction by stretching is accomplished by speeding up each successive roll stand, the increased speed from one stand to the next stretching the tube to the desired length. Wall thickness is obtained by tension which acts along the length of the tube. Delivery speeds range from 850 to 1700 feet per minute. The new mill lends itself to the manufacture of small diameter tubing in long lengths. An automatic outlet guide section trough serving the piercing mill is a late development which provides automatic hydraulically controlled guiding of the mandrel bar and pierced shell.

May Affect Design—A French process, which may open a new era of mechanical design giving machine builders forms and materials they could not use before, will be employed by the Babcock & Wilcox Tube Co., Beaver Falls, Pa. The process uses a modified form of hydraulic press and permits continuous hot forming of shapes that cannot be made in rolling mills because of their complex profiles. The technique also permits shaping of certain alloy steels that are difficult to process in rolling mills because of the molecular structure of the metal. Key to the process is a new concept of lubrication of hot metal that solves the vexing problem of lubrication and thermal insulation of both die and ingot holders. Extruding operation is carried out in a few seconds at constant temperature giving the product uniform mechanical characteristics throughout its entire length.

Speeds from 2000 to 2500 feet per minute now are being obtained by the Weirton Steel Co., Weirton, W. Va. from its new No. 4 electrolytic tin plating line, thus making it the largest and fastest unit of its type in the industry. The 100-foot pickling tank was constructed 30 feet longer than tanks serving the older lines because of the high-speed operation.

Will Cut Processing Time—If the tin plate industry is successful in developing a continuous annealing and cleaning process, tin plate will be produced and ready for shipment in 48 hours. Such a process will permit a tremendous reduction in inventory and a closer control of physical properties and surface conditions. Many tin plate producers believing in the feasibility of this new development are planning to install several units.

A radical departure from conventional sheet galvanizing practice is found in the new Sendzimir process now being used by Armco Steel Corp. Principal features consist of heating and cooling the base metal, maintaining certain prescribed atmospheres at designated points, and immersing the strip in the alloyed zinc bath at a suitable temperature. These steps are balanced and controlled under continuous operating conditions. Components of the coating equipment are arranged so a continuous flow of material through the unit can be consistently maintained. If sustained operations at a scheduled rate of speed are maintained, quality uniformity can be obtained.

The process increases the application of galvanized sheets and coils in that adherence of the coating is sufficient to withstand drawing and forming operations to the drawing limit stability of the base metal without peeling. Metal fabricators are thus provided with a sheet steel that offers better rust protection for their products.

TABLE I
NEW BLAST FURNACES BUILT SINCE WORLD WAR II

Company	Stacks
Bethlehem Steel Co., Sparrows Point, Md.	"H"
Carnegie-Illinois Steel Corp., S. Chicago, Ill.	No. 11 and 12
Carnegie-Illinois Steel Corp., Gary, Ind.	No. 4
Ford Motor Co., Detroit	"C"
Kaiser Co. Inc., Fontana, Calif.	No. 2
Youngstown Sheet & Tube Co., E. Chicago, Ind.	"H"
Total	7

TABLE II

By-Product Ovens Building	
Carnegie-Illinois Steel Corp., Clairton, Pa.	174
Inland Steel Co., Indiana Harbor, Ind.	65*
Blast Furnaces	
Great Lakes Steel Corp., River Rouge, Mich.	1
Woodward Iron Co., Woodward, Ala.	1
Sintering Plants	
Bethlehem Steel Co., Lackawanna, N. Y.	1
Carnegie-Illinois Steel Corp., Clairton, Pa.	1
Carnegie-Illinois Steel Corp., Gary, Ind.	1
Carnegie-Illinois Steel Corp., Munhall, Pa.	1
Carnegie-Illinois Steel Corp., S. Chicago, Ill.	1
National Tube Co., McKeesport, Pa.	1
Electric Furnaces	
Bethlehem Pacific Coast Steel Corp., Los Angeles	1
Open Hearths	
Armco Steel Corp., Middletown, O.	3
Jones & Laughlin Steel Corp., Pittsburgh	6
Pacific States Steel Corp., Niles, Calif.	5
Youngstown Sheet & Tube Co., E. Chicago, Ind.	4
Rolling Mills	
Allegheny Ludlum Steel Corp., Brackenridge, Pa.	3 cold strip
Allegheny Ludlum Steel Corp., Brackenridge, Pa.	1* hot strip
Bethlehem Steel Co., Johnstown, Pa.	1 blooming
Cold Metal Products Co., Youngstown, O.	1 cold strip
Continental Steel Corp., Kokomo, Ind.	1 rod
Thomas Steel Co., Warren, O.	1 cold strip
Wallingford Steel Co., Wallingford, Conn.	1 cold strip
Youngstown Sheet & Tube Co., E. Chicago, Ind.	1 buttweld
Miscellaneous	

Bethlehem Steel Co., Johnstown, Pa.—Enlargement of 21 open hearths to tap 150-ton heats, enlargement of three blast furnaces and rebuilding by-product ovens.
Granite City Steel Co., Granite City, Ill.—Increasing cold rolled sheet output from 25,000 to 40,000 monthly.
National Steel Corp., Ecorse, Mich.—Expanding by-product coke plant and enlarging one open hearth to make 500-ton heats.
Republic Steel Corp., Cleveland—Enlarging open hearths from 135 to 200 tons capacity. Increasing stripmaking capacity.
Weirton Steel Co., Weirton, W. Va.—Enlarging open hearths.
Armco Steel Corp., Ashland, Ky., 72-inch shot-strip mill.

* Replacement.

New Powder Metal Standards

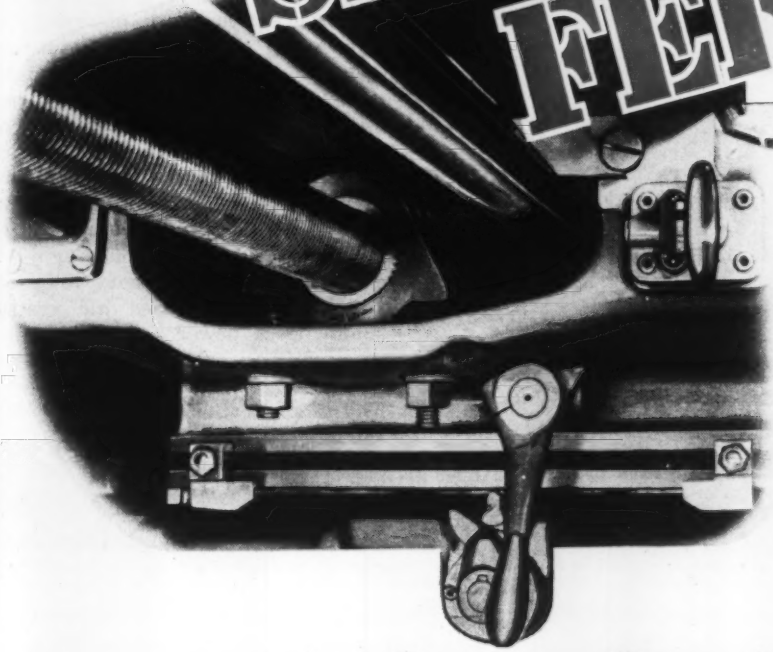
A total of 112 terms are defined in one of two new standards released by Metal Powder Association, New York. It is a glossary of terms used in powder metallurgy and is designated as MPA standard 9-50T, "Tentative Definitions of Terms Used in Powder Metallurgy."

Second standard, designated as MPA standard 10-50T, "Tentative Standard Tension Test Specimens for Pressed and Sintered Metal Powders," specifies a flat tension specimen and a round machined tension specimen to be used in determinations of the tensile characteristics of pressed and sintered metal powders. Detail drawings of each specimen are given along with a list of apparatus required to make them and methods of die lubrication, compacting, sintering and testing.

Aids Coupling Selection

As an aid in the selection of flanges and couplings, Nooter Corp., St. Louis, is offering a selector which incorporates a slide rule presenting pertinent data for 150 and 300 pound ASA standard, heavy duty, 3000 and 6000-pound couplings. Table also shows wall thicknesses of standard, extra heavy and double extra heavy pipe, along with schedules of pipe from 10 through 160.

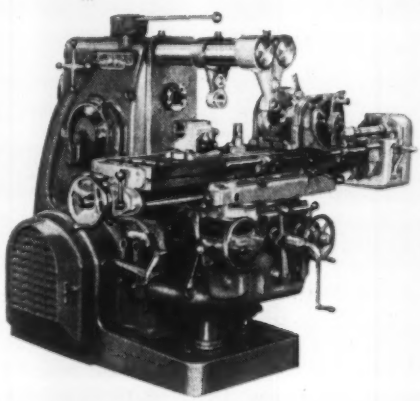
SMOOTHER FEED



You'll get the smoothest feed performance ever on Kearney & Trecker's new CK milling machines. Why? Because these CK's have a new design, heavy duty, 2" diam. table feed screw rotating through an extra-long table feed nut — giving you more bearing contact. That means Smoother Power Feed and longer screw life. Add the positive-acting backlash eliminator and you get CK's smoother, more effective climb milling. What's more, the separate motor drive for table feed is interlocked with the spindle drive motor for overload protection. No danger of stalling cutters in cut.

A new line of knee-type milling machines

KEARNEY & TRECKER MILWAUKEE **CK's**



15 hp No. 3
Model CK
Universal Style
with 5 to 1 ratio dividing head and low head attachment

YES, Kearney & Trecker's new CK milling machines are packed with design and operating features that make them *more productive, more profitable for you.*

Spindle-mounted flywheel, broad feed and speed ranges and greater horsepower with separate motor drives for spindle, and feed and rapid traverse, mean you get fullest possible benefit from modern cutting tools.

New CK columns give you greater rigidity. Compared to former columns, they give you 1000 pounds more metal in heavier ribbing, in box-type, sponson construction to absorb the heaviest cutting loads.

For greater production, these machines are equipped with Kearney & Trecker's famous Mono-Level Control that shortens floor-to-floor time, and materially reduces operator fatigue. New, non-glare micrometer dials help avoid costly errors in reading . . . give you a positive lock at every setting.

Automatic flood lubrication in column and knee and positive metered lubrication to table and saddle, plus generously proportioned gears and shafts assure you greater machine life.

Find out for yourself about Kearney & Trecker's new CK line of knee type milling machines . . . how they meet every demand of modern milling practice . . . how they can give you greater production at greater profit.

Sizes are No. 2, 3, 4, 5, and 6 . . . Plain and Universal styles. For complete details, contact your nearest representative or write direct. Kearney & Trecker Corp., 6784 W. National Ave., Milwaukee 14, Wisconsin.

REPLACEMENT OF OBSOLETE MACHINE TOOLS IS AN INVESTMENT THAT MAKES BOTH DOLLARS AND SENSE

KEARNEY & TRECKER MILWAUKEE MACHINE TOOLS

The lustrous beauty of Nickeloid Pre-finished Metals assures greater salability. The Nickeloid "short-cut" production method assures lower fabricating costs. If you are still taking "the long way 'round", let a Nickeloid Sales Engineer show you the "short-cut".

Nickeloid Metals are available in sheets or coils, in a wide range of gauges and tempers, plated one or two sides, bright or satin finishes of Chromium, Nickel, Brass, or Copper, plated to base metals such as Steel, Zinc, Brass, Copper or Aluminum.

Write for new "Flow-Chart" showing how Nickeloid Pre-finished Metals eliminate costly production operations.

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Electro-plated TO ALL COMMON Base METALS
ALSO LACQUERED COLORS
SHEETS AND COILS
OLDEST AND LARGEST PRODUCERS OF PRE-PLATED METALS

Established 1898
AMERICAN NICKELOID COMPANY
PERU 1, ILLINOIS

Compressed Air

(*Continued from Page* 107)

time element checked. For example, some shops standardize on, say, one type of chipping hammer where actual conditions call for two or three different types to do the work most efficiently.

Take Tool to Work—Cost-cutting opportunities can go well beyond the very important ones of selecting the right tool for the work, however. The wide range of special and standard tools which have been developed by the pneumatic tool manufacturers has made it practicable in many instances to take the tool to the work rather than the work to the tool, with important economies resulting. A major change of this nature involves many special considerations.

Few metalworking companies regard their compressed air system simply as a power source for portable tools, however. The many other cost-cutting opportunities possible by the application of compressed air should be mentioned.

Air Cylinders Used Profitably—Air cylinders offer an almost countless number of profitable uses in metal processing. It would be difficult to find a factory in this field which is not making use of these units in one way or another and it also would be difficult to find such a factory which is fully enjoying all the possible benefits of such applications.

Fields of application for air acting on a piston are found in work positioning and clamping; tool feeds; pushing or pulling operations such as straightening or bending metal or ejecting work from machines; raising and lowering oven doors and a variety of other lifting work.

Look Beyond the Obvious — Any metal processing plant which finds a worker straining at a job, or one who is consuming time by manual tightening of work in place, or engaged in any other such obviously expensive operation will frequently find an opportunity to apply profitably air cylinders to facilitate the work. The progressive plant, however, usually has overcome these difficulties and would have to seek out the less obvious opportunities for cost cutting in order to use air cylinders profitably.

In the latter case, the approach might be just the opposite to that of the obvious opportunities for cost-cutting. That is, if a worker is performing a routine and simple operation, possibly his productivity could be multiplied with the aid of air cylinders. For instance, metalworking plants which equip drill presses with air feeds frequently have one opera-

DEMPSTER DUMPSTER SYSTEM

SERVING COST-MINDED MANAGEMENT FROM COAST TO COAST

. . . handling bulk materials of every description at phenomenal savings

Photos show the three simple stages of servicing a container. The Dempster-Dumpster, operated from hydraulic controls by driver in the cab, picks up each container and hauls it to point of disposition where it may be dumped or set down intact.

—recognized across the nation

. . . Aluminum Company of America, well known for sound management, uses the Dempster-Dumpster System

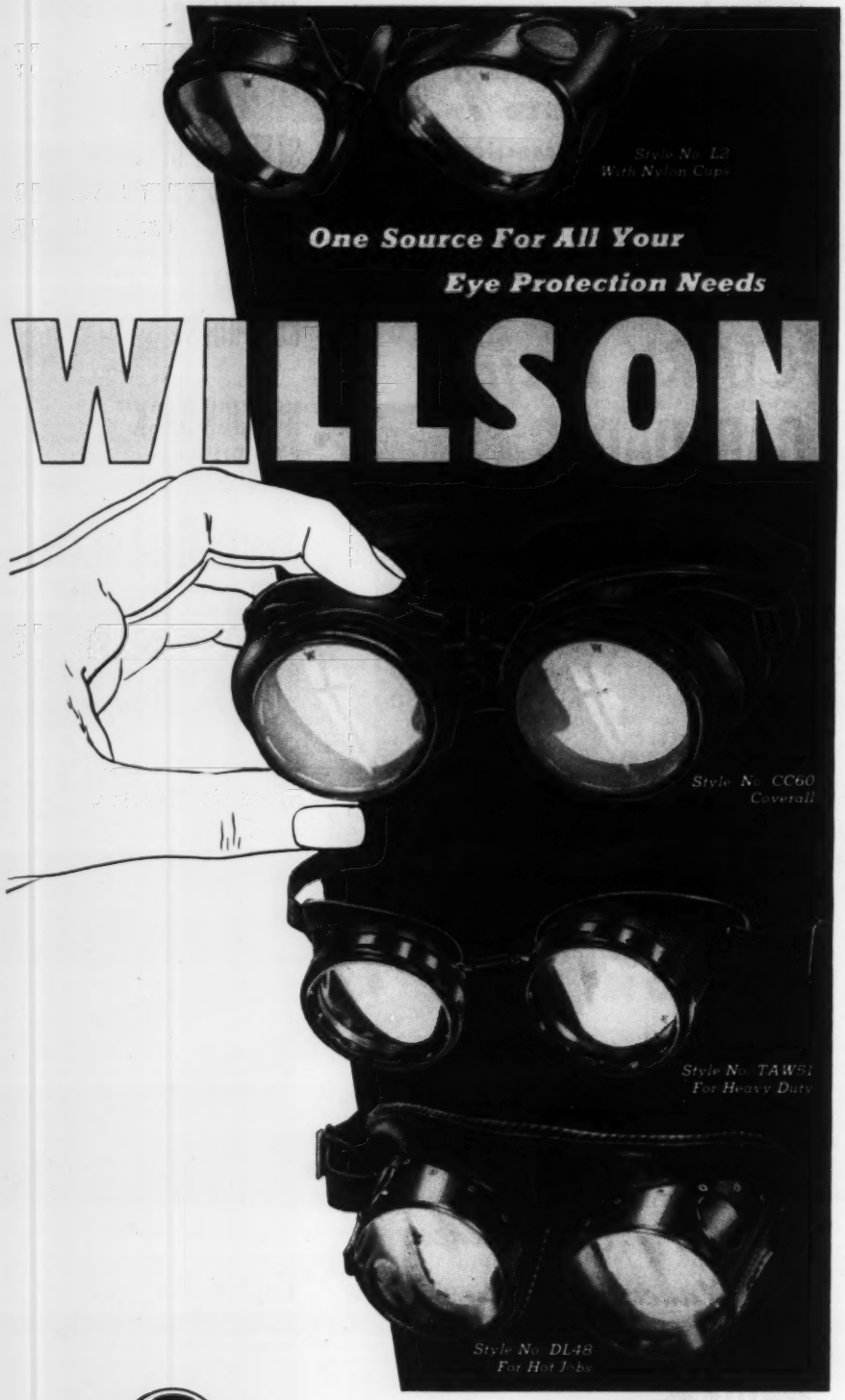
Aluminum Company of America is among the hundreds of cost minded manufacturers, both large and small, using the Dempster-Dumpster System of bulk materials handling . . . the system recognized across the nation for its efficiency and ability to reduce costs.

In the Dempster-Dumpster System one truck-mounted Dempster-Dumpster eliminates up to 10 conventional trucks because one Dempster-Dumpster services a great number of Dempster-Dumpster containers. These detachable containers, ranging in size up to 12 cu. yds., carry pay-loads equal to and greater than conventional truck bodies. They are built in a wide variety of designs best suited to handle any type of materials, be they bulky, light or heavy . . . solids or liquids . . . trash or rubbish. Containers are spotted at necessary materials accumulation points inside and outside buildings. The Dempster-Dumpster services one pre-loaded container after another.

In addition to saving thousands of dollars annually in tires, gas, oil, and truck maintenance, the Dempster-Dumpster System eliminates standing idle time by truck and crews . . . eliminates handling and re-handling of materials . . . and increases efficiency and cleanliness. It will pay you to investigate the Dempster-Dumpster System now! A product of Dempster Brothers, Inc.

One Dempster-Dumpster Services All Containers. . . All Designs. . . All Sizes

DEMPSTER BROTHERS, 690 Dempster Building, Knoxville 17, Tennessee



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Comfort • Size • Safety

For workers on heavy duty jobs; in hot or dusty work; exposed to chemical splash—any hazardous job—you can get what you need from WILLSON. Not only that, but every type has comfort features that help get safety equipment worn; and all have reliable WILLSON Super-Tough* lenses. For help in selecting exactly the right equipment for your needs, ask our nearest distributor for our new catalog—or write direct to WILLSON PRODUCTS, INC., 233 Washington St., Reading, Pa.

at the cold storage plant, four more ramps were recently installed.

The latter four are similar to the first two except that they are 6 feet wide and 8 feet long. Since refrigerator cars are not accessible to the platform on which the second group is installed, the ramps were devised to accommodate only trucks and vans. One other refinement is also present: All four new ramps are powered by two ¾-hp units.

Manpower Saved—Labor savings of 15 per cent are being realized in the loading and unloading of vans and trucks; however, insufficient number of refrigerator cars have been worked with the new ramps to establish any definite savings.

In addition to manhour savings, it has been found that the usual safety hazards created by the use of steel shoes have been eliminated and that a difficult housekeeping problem has been solved. No longer is it necessary to search for a place to store ungainly shoes when they are not in use.

Mechanization Boosts Output

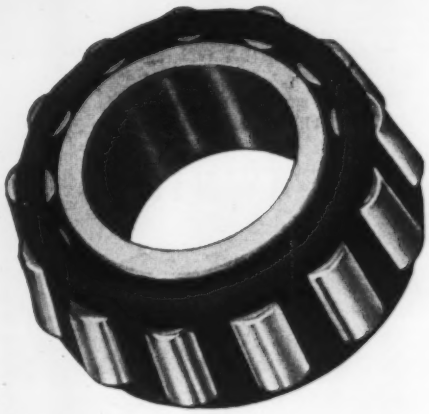
Development of a roll-over fixture by engineers of Kalamazoo Stove Co., Kalamazoo, Mich. and Linde Air Products Co., New York, has made possible girth welding both ends of the cylindrical portion of hot-air furnaces at one time. Practically the entire welding operation was mechanized, resulting in reduced handling costs and increased production.

Fixture was made by oxygen-cutting two large circular plates. Cutouts were made to fit the shape of the air furnace, braces and supports tying the two pieces together. Two Unionmelt welding heads are placed on stationary pedestals.

One makes a continuous weld through the flanged ash bottom, joining it to the shell of the furnace, while the other head is adjusted at the top of the cylinder to make an outside weld, joining the top of the furnace to the shell. Fixture is placed on motor-driven rolls and turns at the proper welding speed.

Iron Roofing Standard Revised

Covering the same products as the original 1928 recommendation, but adding siding and ridge roll, is the simplified practice recommendation R78-28, iron and steel roofing. It is being submitted to producers, distributors, users and others interested for acceptance or comment, according to Commodity Standard Division, National Bureau of Standards, Washington 25, D. C. Corrugated v-crimp and pressed standing seam products are reduced to four and corrugated roof-



Inclusion-free high-carbon ferro chromium

assured by new process

MOST ball and roller bearings must take terrific punishment in service, and their dependability is based directly upon the quality of steel from which they are made.

To meet the requirements of the bearing manufacturer and his customers, the steelmaker can rely upon our newly improved ferro chromium to help him produce consistently high grade bearing steels.

The high-carbon ferro chromium we have recently developed is exceptionally free from non-metallic inclusions, entrapped slag and dissolved gases. It is made by a new process* which includes filtering out harmful inclusions by pouring the metal, as tapped from the furnace, through a layer of molten slag of special composition. In addition to removing the undesirable inclusions, this process also assures greater density of the metal and the absence of shrinkage cavities in individual lumps.

High-carbon ferro chromium contains 66 to 70 per cent chromium, 4 to 6 per cent carbon, and 3 per cent maximum silicon.

Our technical staff will be glad to demonstrate to you the benefits to be gained in your steelmaking by the use of this improved high-carbon ferro chromium. *Patented

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CHEMICALS AND METALS

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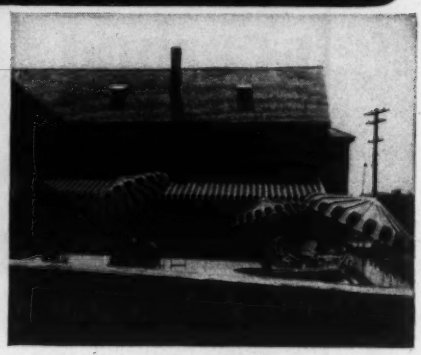
KOOLVENT VENTILATED
ALUMINUM AWNINGS
ARE *Alodized**
FOR EXTRA DURABILITY!
EXTRA PAINT PERMANENCE!



Modern, colorful KoolVent Awnings are designed for all-weather service in all seasons. That means these permanent, ventilated aluminum awnings must withstand the ravages of all elements and all foreign substances — sun, rain, snow, sleet, smoke, industrial fumes, dust, dirt, salt air, soapy water — so destructive to paint life.

To provide the necessary paint-bonding and protective coating that meets the rigid service requirements of KoolVent Awnings, the manufacturers† of KoolVents use "Alodine" to anchor the paint finish and preserve its lustrous beauty.

*"Alodine"®

ALODIZED ALUMINUM provides enduring finish beauty and metal preservation. This fact, called to the attention of your customers by the attractive ALODINE seal, will give your products an extra selling point. The ALODINE seal is available to all qualified users of ALODINE. Details on request.

†KoolVent licensees using "Alodine" and/or Alodized aluminum include:

KoolVent Metal Awning Co. of Cleveland, Cleveland 15, Ohio
KoolVent Metal Awning Corp. of America, Texas Division, Dallas, Texas
KoolVent Metal Awning Co. of Pittsburgh, Glenshaw, Penna.
KoolVent Metal Awning Corp. of Michigan, Detroit 4, Michigan
Aluminum Awning Co. of Arizona, Phoenix, Arizona
KoolVent Aluminum Awning Co., Mercerville, New Jersey
KoolVent Metal Awning Corp. of Indiana, Pendleton, Indiana
KoolVent Metal Awning Corp. of Chicago, Elmwood Park 35, Illinois
KoolVent Aluminum Awning, Div. of Duralco Mfg. Co., Inc., Wheeling, West Virginia
KoolVent Awnings Limited, Oshawa, Ontario
Eastern KoolVent Aluminum Awning Inc., Mineola, Long Island, N. Y.
KoolVent Aluminum Awning Co. of Arkansas, Inc., Little Rock, Arkansas
KoolVent Awnings Limited, Montreal, Quebec
KoolVent Metal Awning Corp. of N. E., Waltham 54, Mass.
KoolVent Metal Awning Co. of P.R., Inc., MacMurray & Co., Inc., Hato Rey, Puerto Rico
KoolVent of California, Inc., Los Angeles, California
Penn-Ohio KoolVent Metal Awning Corp., Girard, Ohio
Buffalo KoolVent Metal Awning Co., Inc., Buffalo 1, New York

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ing and sidings is increased to seven gages.

Short Course on Corrosion

Nine lecture periods with adequate time for discussion have been scheduled for the short course on corrosion to be held at Case Institute of Technology, Cleveland, Sept. 25-29. Designed as a refresher for those actively engaged in corrosion prevention, it is said that the course will not be too advanced for those just entering the field.

Among those lecturing are: F. L. LaQue, International Nickel Co. Inc., New York; Dr. R. B. Mears, Carnegie-Illinois Steel Corp., Pittsburgh; H. A. Robinson, Dow Chemical Co., Midland, Mich.; Prof. Mars G. Fontana, Ohio State University, Columbus; and Professors W. von Fischer, E. G. Bobalek and R. B. Hoxeng of Case. Additional information is available from Case Institute of Technology, Cleveland 6, O.

Positioner Gives More Power

Successful tests carried out for a piston-type pneumatic positioner with long-stroke and extra power include damper positioning on diesel engine air-cooling systems and damper positioning on pneumatic temperature and pressure control systems. Known as the Grad-U-Motor air piston and made by Minneapolis-Honeywell Regulator Co., Minneapolis, it is a development of the company's Brown Instruments Division.

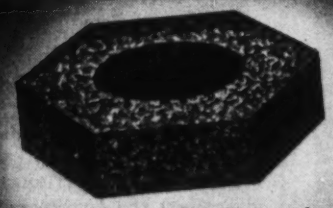
Gear Catalog Lists 4500 Items

Information on application, selection and stock items are included in catalog No. 55, issued by Boston Gear Works, Quincy, Mass. Over 100 product groups, including spur, miter, bevel and worm gears, roller chains, ball bearings, couplings, etc., are listed, over 4500 in all. Engineering data, formulas, horsepower rating charts, etc., are also included in the pocket-sized catalog and data book.

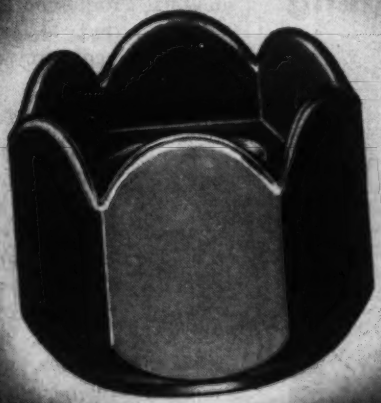
Enameling Cost Cut Promised

Expected to foreshadow a series of developments which will make possible thinner, more flexible porcelain enamel finishes at lower cost is a new roll-quench "flake" development announced by Ferro Enamel Corp., Cleveland. According to the company, the new product seemingly is destined to replace the traditional water-quenched frit granules which have been the basic material for porcelain enamel.

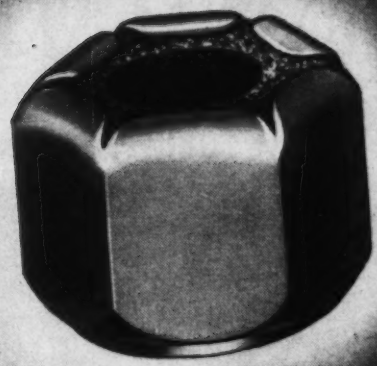
The development will make possi-



treated hexagon insert



tough one-piece cold forged nut



Tufflok Nut

New Townsend Tufflok Nut Is Tougher Three Ways To Give You Tighter Grip, Greater Safety, With Economy

You get a tighter grip, greater safety and economy with the new Townsend Tufflok nut. It gives you more service at less cost. The exclusive Tufflok design*, plus the materials in the insert and nut body combine to give you the toughest lock nut yet produced for any use where nuts must stay put under a variety of adverse conditions.

Here are the New Exclusive Features of the Townsend Tufflok Nut:

1. *Tough hexagon insert*—won't turn in its seat, gives you positive grip on the bolt at all times. Specially treated insert resists moisture, oil and drying out. Special inserts where special applications are required.
2. *Tough, one piece cold forged nut* has exclusive petal design to assure positive insert staking.
3. Tough threads *cut in cold forged steel* are stronger, spin on easier, resist galling, speed up application and also afford more reuse.

The quality, efficiency, and safety with economy, you get in the new Townsend Tufflok nut is made possible by the skill and experience gained by The Townsend Company as the oldest manufacturer of small cold formed fasteners in the United States. This know-how combined with the background of The Nylok Corporation in producing millions of lock nuts gives you the advantage of a reliable source for your lock nut requirements.

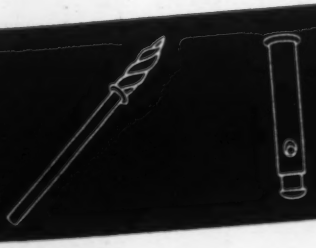
The new Townsend Tufflok nut with exclusive hexagonal treated insert and special cold forged body is available in machine screw sizes No. 4 through $\frac{3}{8}''$, cadmium or zinc plated. This line will be increased in the near future.

For longer service with greater safety and economy specify Townsend Tufflok Nuts. Write today for samples and complete information.

THE TOUGHEST LOCK NUT EVER PRODUCED

*Licensed under The Nylok Corporation patents. Tufflok is a trademark of the Townsend Company.

Call or write today to:



Townsend

COMPANY — ESTABLISHED 1816

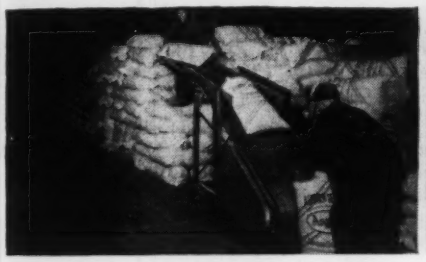
New Brighton, Pa.

Chicago 38, Ill.

FOUR WAYS
to get results
in faster, lower-cost handling

1 WITH ROLLER AND BELT CONVEYORS

— keep cases, cartons, packages, parts moving — better, faster, cheaper — on Standard gravity or power roller or belt conveyors. We plan and build efficient equipment for any handling need — designed to fit your particular needs — cut your handling cost.



2 with a HANDIPILER

— a portable self-contained conveyor unit. Stacks up to 17 ft. — handles up to 135 lbs. packages — saves time and manpower in storage and shipping rooms.

3 with an INCLINEBELT

— lifts and lowers packages from floor to floor continuously and automatically. Available to meet elevations 8 ft. to 14½ ft. inclusive; handles commodities up to 25½ inches wide.

4 with PNEUMATIC TUBE SYSTEMS

— provide swift, sure, safe transportation of messages, documents, blueprints, samples, small parts, money; cylindrical or oval tubes 1½ inch upward with dispatching and receiving terminals for complete systems to meet your needs. Write for special bulletin SPT.

Write for Standard's general Catalog No. ST-90. Tell us what you want to handle or name equipment on which you want more information.

STANDARD CONVEYOR COMPANY
North St. Paul 9, Minn.
Sales and Service in Principal Cities

ble lower cost production, greater uniformity and easier quality control through faster and more uniform grinding, elimination of dust in loading of mills and improved stability of set and more uniform bubble structure. The "flakes" are produced without the traditional water quenching in special, wholly-automatic smelters. Production is now on a limited scale but is expected to rise sharply, the company reports.

248 Assemblies per Hour

Capable of machining and assembling 248 refrigerator pistons per hour is a four-way horizontal drilling machine now in operation. Made up of one vertical unit and head with standard column-wide ways, left front and rear horizontal units and drill heads and a special unit for pressing in tubes, cutting off and inserting brazing wire, the machine is a development of National Automatic Tool Co., Richmond, Ind.

In machining and assembling the pistons, the operations of the Holesteel machine include drilling, core-drilling, facing, rough and finish reaming, chamfering, wire-brushing, cutting off and inserting brazing wire, and assembling tube in piston.

Recommended Flow Plan Symbol

Prepared to provide a satisfactory system of symbols and identifications for industrial process instrumentation equipment and to designate and identify such equipment on flow plans and in other requirements is tentative recommended practice RP5.1, issued by Instrument Society of America, Pittsburgh. Purpose is to promote a uniformity of practice that will simplify and expedite instrumentation work.

System of symbols and identifications is said to be the result of an extensive survey on the subject. Symbols and identifications presented are suited primarily to the needs of the industrial process industries.

Aluminum Trailer Developed

Employing stressed-skin construction along with special extruded aluminum sections to permit the best distribution of metal for maximum strength with minimum weight, is an aluminum trailer body, developed by Truck Trailer Associates, a group of ten trailer manufacturers, and Reynolds Metals Co., Louisville, Ky. Longitudinal radius section as well as uprights and roof bows are extruded aluminum sections. Door frames are specially shaped to permit use of an extruded piece of rubber as a gasket.

New Books

Cost Cutting Ideas

Practical Ideas for Machinists, edited by H. E. Linsley, associate editor, *American Machinist;* cloth, 268 pages, 7 x 10 inches; published by McGraw-Hill Book Co., New York, for $4.50; available from STEEL, Penton Building, Cleveland 13, O.

Almost 500 time, trouble and money-saving ideas in 12 different categories are available for inspection and application by tool designers, shop superintendents, foremen and machinists in this unique manual. Among the many shortcuts, suggestions and clever ideas are those for enabling one machine to perform the work of another or for expanding the capacity of a machine beyond its normal range.

Ideas are divided into the following categories: Drill presses, grinders, hand tools, inspection and measuring lathes, layout and bench work, milling machines and broaches, planers and shapers, punch presses, repair and maintenance, welding, brazing and soldering and miscellaneous hints. Not a textbook and not an introduction to any given field, the book stresses tricks of the trade which have been worked out and proved by skilled mechanics when faced with problems defying solution by ordinary methods. Almost all of the ideas described are illustrated. A detailed index is also included.

Lathe Operation

Running a Regal, paper, spiral binding, 89 pages, 8½ x 11 inches; published by R. K. LeBlond Machine Tool Co., Cincinnati, O., for 50 cents; available from STEEL, Penton Bldg., Cleveland 13, O.

Now in its 14th edition, this book has two features which distinguish it from previous issues: Size has been enlarged and use has been made of exploded drawings in the parts section. Written to indoctrinate the apprentice in the fundamentals of good lathe operation and to help him produce accurate work on the Regal lathe, the manual contains over 150 illustration. In the exploded parts section, each part in the lathe is illustrated in proportion and relation to connecting or adjacent parts.

It is expected that this new feature will simplify ordering of repair parts thus making it possible for the apprentice to take the various units apart, to study and reassemble them with confidence. Eighteen pages are devoted to instruction for performing 24 common lathe operations, such as centering work, spacing to length, tapping, lapping, taper turning and boring. Also included are instruc-

The ABC of MST
A LWAYS MAKES POSSIBLE
B ETTER PRODUCTS
C AT LOWER OST
Michigan
The Modern Electric Resistance
WELDED STEEL TUBING
A Quality Product
Standard Sizes
Tube Diameter O.D. Size
Maximum Wall BWG Decimal
Maximum Wall BWG Gauge
Minimum Wall BWG Decimal
Minimum Wall BWG Gauge
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Can be Bent ... FLANGED, EXPANDED, TAPERED, DEPRESS BEADED, EXPAND BEADED, ROLLED, EXTERNAL UPSET, INTERNAL UPSET, FLUTED, SPUN CLOSED, FORGED, BEVEL FLANGED, FLATTENED, SWAGED
ROUND
⅜" to 4" O. D. 9 to 22 gauge
SQUARE-RECTANGULAR
½" to 2" 20 gauge 1" to 2¾", 14, 16, 18 gauge
Consult us for engineering and technical help in the selection of tubing best suited to your needs.
RESISTANCE-WELDED STEEL TUBING
Michigan STEEL TUBE PRODUCTS CO.
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Approved Protection for oil filled electrical equipment

Fire damage to transformers can seriously curtail plant operations and result in high cost equipment losses and out-of-service time. That's why you'll be using good judgment when you make sure that your oil filled power generating equipment is safe from fire 24 hours a day, every day of the year.

You can get this protection by specifying *Automatic* FIRE-FOG, for when fire breaks out, FIRE-FOG goes into action instantly . . . automatically . . . stops the fire quickly and surely.

Specifically designed for your particular risk, *Automatic* FIRE-FOG is electrically safe and carries the approval of all leading insurance authorities.

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FIRST IN FIRE PROTECTION
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OFFICES IN PRINCIPAL CITIES OF NORTH AND SOUTH AMERICA

tions on how to operate, lubricate and maintain the lathe plus material on measuring instruments, lathe tools and how to grind them, and tables frequently used in connection with lathe work.

Methods of Inspection

Inspection Organization and Methods, by James E. Thompson, consulting management engineer; cloth, 369 pages, 6¼ x 9¼ inches; published by McGraw-Hill Book Co., New York, for $5.00; available from STEEL, Penton Bldg., Cleveland 13, O.

Methods which have been tested and found to improve efficiency, simplify procedures and reduce cost in inspection departments may be found in this book, written from the management's viewpoint. It will help executives on all levels to set up effective inspection organization, establish an adequate inspection plan and determine procedures to be followed in maintaining quality level with minimum expense. Procedures given may be applied regardless of product being made or quality level being maintained.

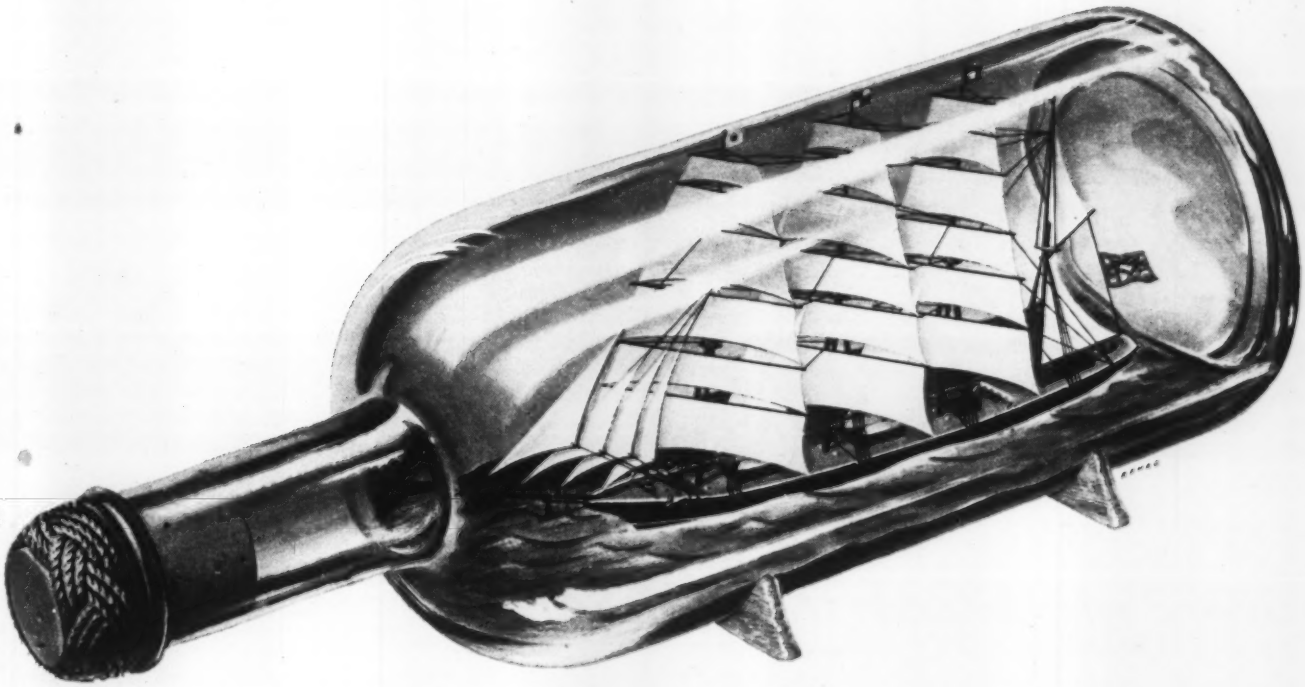
Such modern inspection developments as the automatic Sonigage and Magniglo and Statiflux processes are described. Practical methods of controlling and recording the flow of work to insure integrity of the product, maintain harmonious relations with other factory departments are presented. The greater emphasis is placed on organization, procedures and methods. It is explained that the tools of inspection and their usage are simply the mechanical implementation of basic management policy, and a general understanding of the correct usage of inspection equipment is assumed.

Induction Heating

High-Frequency Induction Heating, by Frank W. Curtis, consulting engineer; cloth, 389 pages, 5¾ x 8¼ inches; published by McGraw-Hill Book Co., New York, for $6.00; available from STEEL, Penton Bldg., Cleveland 13, O.

Purpose of the second edition, like the first, is to offer the user of high-frequency induction heating equipment basic technical application details which will serve as a reference in connection with the heating of metal parts, such as may be required for hardening, heat treating, brazing, soldering, annealing, stress relieving, forging, upsetting or melting. Inasmuch as this type of heating has seen many improvements recently, largely in connection with application techniques, high frequency generator users have a broader selection of coils, fixtures and process data to draw from.

Included in the book is a more



It's craftsmanship that counts

THIS example of craftsmanship symbolizes something that every producer of quality steel must know —*painstaking care is essential.*

Such craftsmanship is fundamental at Kaiser Steel, where every step of production is rigidly controlled, from the mining of coal and iron ore to the production of finished steel.

It means that scores of analyses, tests and inspections are made to make sure that quality requirements are met on every count.

Such painstaking attention to quality is another reason why the West's only integrated *independent* steel plant is bringing more industry, more jobs, more wealth to the West!

It's good business to do business with

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PROMPT, DEPENDABLE DELIVERY AT COMPETITIVE PRICES • plates • continuous weld pipe • electric weld pipe • hot rolled strip • hot rolled sheet • alloy bars carbon bars • structural shapes • cold rolled strip • cold rolled sheet • special bar sections • semi-finished steels • pig iron • coke oven by-products
For details and specifications, write: **KAISER STEEL CORPORATION, LOS ANGELES, OAKLAND, SEATTLE, PORTLAND, HOUSTON, TULSA, NEW YORK**

"More COLOR, Plunkett.. COLOR Sells!"

Yes, COLOR! In your product, it's great medicine for anemic sales. It's an easy prescription to fill, too. Pre-coated THOMAS STRIP adds it, without costing you one red cent for new equipment . . . saves plenty, in fact, by eliminating several processing steps. And, the snap and sparkle of gleaming Thomas coatings quickly change lack-lustre products into brisk best-sellers.

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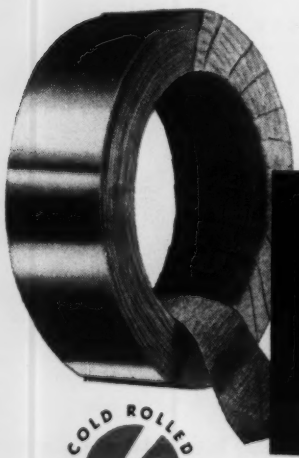
For example, why not test the color possibilities of LACQUER COATED THOMAS STRIP? In bright red, green or yellow, it's widely used for decorative purposes. And, it saves you the costs of final finishing of fabricated parts.

Or, choose gleaming THOMAS Coatings in golden sheens of BRASS, the rich glow of COPPER, the brilliance of NICKEL and of CHROMIUM, the soft, silvery lustre of ZINC, TIN and LEAD ALLOY.

Prefer to paint your products? Then you'll find ZINC-COATED BONDERIZED THOMAS STRIP an economical base for paint, lacquer and enamel.

In any case, ready-to-use *pre-coated* THOMAS STRIP will help streamline your manufacturing process to two essentials—fast fabrication and assembly. What's more, it extends the material and fabricating economies of steel to parts once made of more costly metals. We'll be happy to send you more details, and to arrange a test run in your plant. Just write:

THE THOMAS STEEL COMPANY
WARREN, OHIO
Specialists in Cold Rolled Strip Steel



Thomas Strip
SPEEDS PRODUCTION . . . CUTS COSTS

COLD ROLLED STRIP STEEL

Electrocoated with Zinc, Copper, Nickel, Brass and Chromium • Hot Dipped Tin and Lead Alloy • Lacquer Coated in Colors • Annealed Spring Steel • Alloy Strip Steel • Uncoated Strip Steel • Produced to Your Specifications.

comprehensive analysis of coil designs, the work coil being the basis around which induction heating functions. Discussion of fixture designs has also been expanded. Localized hardening and joining of metal assemblies, the principal uses for induction heating, are covered in two chapters. Types of steel best suited to induction hardening, various means of quenching, soft solders, brazing alloys and fluxes are all treated in greater detail in this edition. The book explains fundamental electrical principles involved, defines the range of the process as well as construction design of coils and application of induction heating to specific heating problems.

Metallurgical Report Is Graphic

Data on chemical and physical properties of wrought steels at elevated temperatures is the subject of a report published by American Society for Testing Materials, Philadelphia. Issued under the auspices of the American Society for Testing Materials-American Society of Mechanical Engineers joint committee on effect of temperature on the properties of metals, the report is largely a graphical presentation.

Standard commercial grades of steel are covered, the latest data on tensile, creep and rupture properties being given. First 52 pages cover the plain carbon and alloy steels containing molybdenum and up to 3 per cent chromium; second part covers ferritic and austenitic steels with more than 5 per cent chromium, also the stainless varieties. Copies of the 112-page, 8½ x 11 inch report are available from the ASTM, for $3.00.

Materials Handling Handbook

Practical guide for the analysis of material handling operations and the application of unit-load method with power-operated industrial trucks and accessories is available from Electric Industrial Truck Association, Philadelphia.

Containing many illustrations, charts and diagrams, the book is divided into four sections: Evaluation of industrial truck handling; material handling management, with subsections devoted to preparation and use of flow process charts, handling operations in production, handling in storage, the use of unit loads in storage, with layouts, commodity and capacity factors, etc.; organization of an industrial truck system; and practical truck engineering.

Described are the different types

HAND-PROPELLED CRANE WITH ELECTRIC HOIST

KNOW THE ARCH

The round arch is an easy means of identifying Cleveland Tramrail. Only Cleveland Tramrail makes ARCH BEAM with true round arches. No other section has the most important feature of ARCH BEAM the raised wearing tread.

MILD STEEL BEAM

The beam is arched at regular intervals. It has same strength as similar solid beam.

COMPOUND SECTION

Made of two parts: wide flanged beam welded to standard Cleveland Tramrail rail.

HIGH CARBON RAIL

Especially rolled with flat raised treads of high carbon alloy steel. Minimum brinnel hardness of 225.

REDUCES WEIGHT

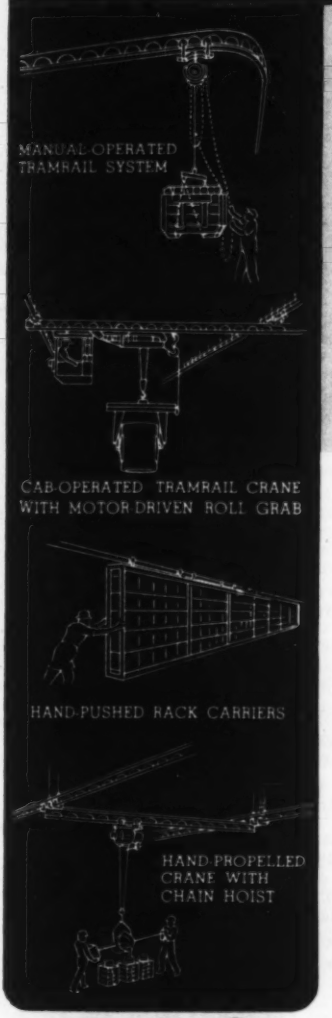
Arches reduce weight without sacrifice of strength.

RAISED WEARING TREADS

Raised treads prevent rail peining and provide a wear factor not obtainable with any other single-piece rail. There are no separately mounted rails or wear treads to loosen and require maintenance.

SEVEN SIZES

ARCH BEAM is available in seven sizes (8" to 18" deep), all with same rail width, enabling carriers to travel between any pair of beams.



MANUAL-OPERATED TRAMRAIL SYSTEM

CAB-OPERATED TRAMRAIL CRANE WITH MOTOR-DRIVEN ROLL GRAB

HAND-PUSHED RACK CARRIERS

HAND-PROPELLED CRANE WITH CHAIN HOIST

Arch Beam . . .

A SUPERIOR OVERHEAD TRACK

ARCH BEAM is recommended wherever loads to be handled are too heavy or spacing of supports too great for standard Cleveland Tramrail rail.

The development of ARCH BEAM track with regularly spaced openings in the beam was pioneered by Cleveland Tramrail. With millions of feet used for thousands of cranes, transfer bridges, runways and complete overhead track systems, both electrified and hand-propelled, ARCH BEAM has become a trade mark recognized everywhere by the true round arches, as a symbol of Cleveland Tramrail.

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CLEVELAND TRAMRAIL

OVERHEAD MATERIALS HANDLING EQUIPMENT

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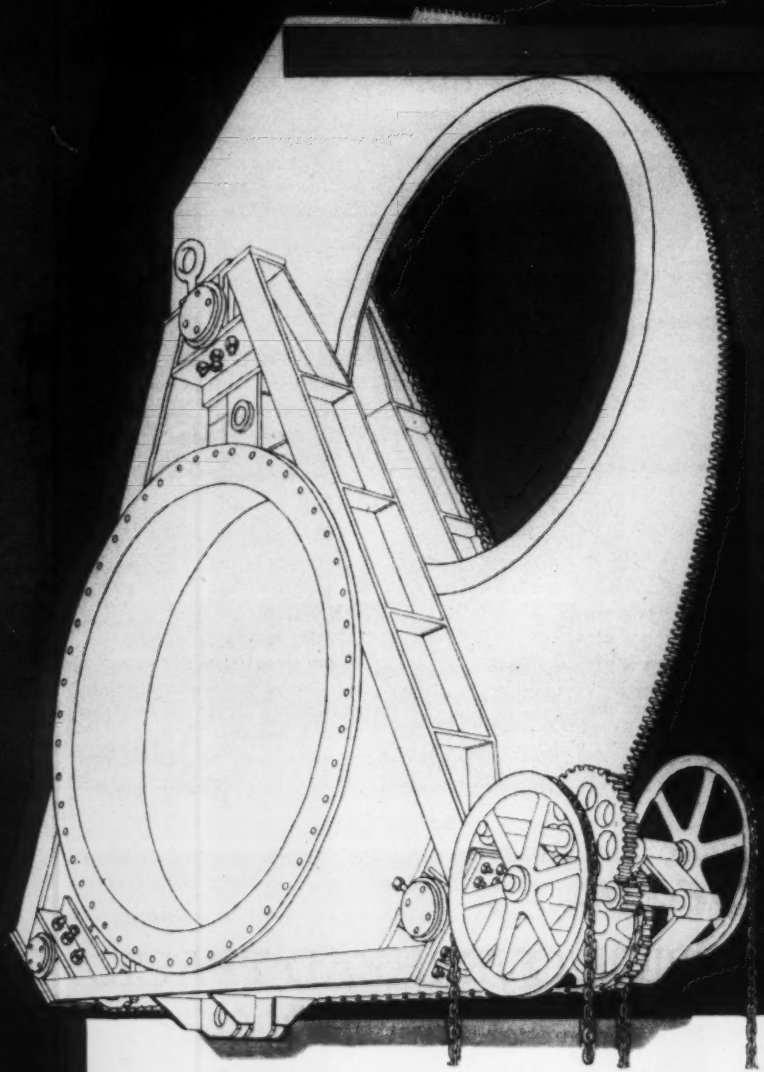

Brosius-Westling

Goggle Valve

* This complete redesign of a time-tested valve now gives you fastest positive mechanical operation combined with high structural strength and new protection against leakage. Your inquiry is invited.

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of industrial trucks in use, their integration of operation with other material handling systems, plus information on storage batteries and battery records, how to measure handling costs and routing and dispatching. Different types of skids, pallets and other load carriers are illustrated and discussed. Copies of the book are available for $1.00 from the association.

CALENDAR OF MEETINGS

† *Denotes first listing in this column.*

Sept. 19-21, American Society of Mechanical Engineers: Fall meeting, Hotel Sheraton, Worcester, Mass. Society headquarters at 29 W. 39th St., New York 18.

Sept. 23-26, Packaging Machinery Manufacturers Institute: 18th annual meeting. The Homestead, Hot Springs, Va. 342 Madison Ave., New York 17, is address of institute.

Sept. 26-29, Association of Iron & Steel Engineers: Annual convention and Iron and Steel Exposition, Cleveland. AISE headquarters are at 1010 Empire Bldg., Pittsburgh 22.

Oct. 2-6, Gas Appliance Manufacturers Association: Biennial exposition, Convention Hall, Atlantic City, N. J. Association headquarters: 60 E. 42nd St., New York 17.

Oct. 5-6, American Foundrymen's Society: Regional conference, Plaza Hotel, San Antonio, Tex. Sponsored by Texas chapter, AFS, with headquarters at 5210 Canal, Houston.

Oct. 9-11, National Academy of Sciences: Autumn meeting, General Electric research laboratory, Schenectady, N. Y. Address of NAS headquarters is 2101 Constitution Ave., Washington 7, D. C.

Oct. 10-12, Society of Industrial Packaging and Materials Handling Engineers: 5th annual industrial packaging and materials handling exposition, Convention Hall, Philadelphia. Society is located at 20 W. Jackson Blvd., Chicago 4.

Oct. 11-13, American Society of Civil Engineers: Fall meeting, Chicago. Headquarters of society are at 33 W. 39th St., New York 18.

Oct. 12-13, Foundry Equipment Manufacturers' Association: Meeting, Greenbrier Hotel, White Sulphur Springs, W. Va. Association headquarters are in Engineers Bldg., Cleveland 14.

Oct. 12-13, Gray Iron Founders' Society: 22nd annual meeting, Netherland Plaza Hotel, Cincinnati, O. 210 National City-E. Sixth Bldg., Cleveland 14, is location of society.

Oct. 15-17, Conveyor Equipment Manufacturers Association: Meeting, Greenbrier Hotel, White Sulphur Springs, W. Va. Association headquarters are at 1129 Vermont Ave. N. W., Washington 5, D. C.

Oct. 4-6, American Hot Dip Galvanizers Association: Semiannual meeting, Greenbrier Hotel, White Sulphur Springs, W. Va. Association headquarters: 2311 First National Bank Bldg., Pittsburgh 22.

Oct. 5-6, Porcelain Enamel Institute: 4th annual sales and management conference. CANCELLED, due to world situation. Institute is located at 1010 Vermont Ave. N.W., Washington 5, D. C.

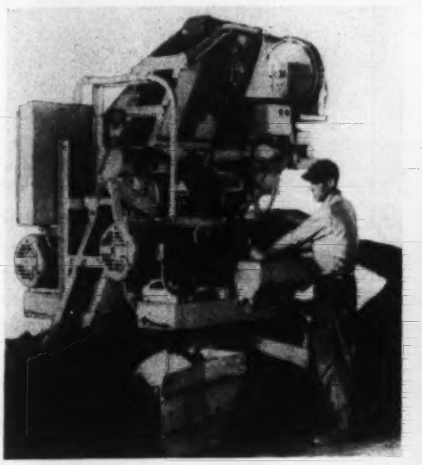
Oct. 11, American Iron & Steel Institute: Regional technical meeting, Hotel William Penn, Pittsburgh. Address of institute is 350 Fifth Ave., New York 1.

Oct. 11-13, Electrochemical Society: 98th meeting, Hotel Statler, Buffalo, N. Y. Society address: 235 W. 102nd St., New York 25.

New Products and Equipment

Sand Conditioner Improved

Improvements incorporated in the Nite-Gang, a motive sand preparation unit manufactured by Beardsley & Piper Division, Pettibone Mulliken Corp., 2424 N. Cicero Ave., Chicago 39, Ill., provide greater capacity and



more efficient operation. Capacity has been increased from 40 to 50 tons per hour of blended, iron-free, thoroughly screened and aerated sand.

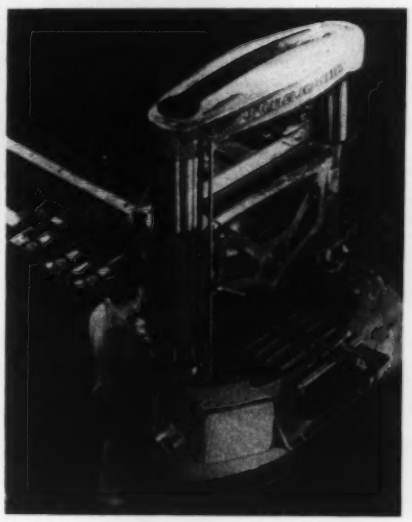
Machine requires one operator and moves under its own power while loading or traveling from floor to floor. After castings have been removed from the shakeout sand, machine moves directly into it and the rotating spiral blends sand and additions. Mixture is conveyed to the bucket elevator where it is further blended and discharged over the magnetic separator. Iron-free sand falls into the high capacity Screenarator unit where it is screened, aerated and then discharged into a pile, bin or window. Adjustable discharge spout permits discharge to any distance within 50 feet and in any direction within a 240-degree arc.

Check No. 1 on Reply Card for more Details

High Speed Cold Sawing

Cutting force is directed against the greatest point of resistance within a rigid frame on the Ohler hydraulic high speed cold sawing machine manufactured by Klingelhofer Machine Tool Co., 20 Prospect St., Westfield, N. J. The constant pressure hydraulic feed system adapts itself within the predetermined cutting pressure limits to the cutting resistance of the material, this assuring a maximum rate of feed at all times. A centralized control system interlocked with the hydraulic stock feed reduces the operating cycle time. Hydraulic cylinders absorb and control saw carriage weight and the vertical cutting force.

Saw blade is mounted in the true center of the plane formed by the center line of the columns. Hydraulic vise clamps the material directly under the center of the blade. Cooling solution is fed from above on both sides and runs into the kerf. Hydraulic feed may be regulated from 0 to 20 inches per minute. Saw carriage has rapid approach and re-



turn actuated by either a hand lever or automatic control. Model 1000 will cut 15¾-inch rounds, 14-inch squares and 24-inch channels and I-beams. Model 660 will cut 10¼-inch rounds, 9½-inch squares and 16-inch channels and I-beams.

Check No. 2 on Reply Card for more Details

Provides Hammer Stroke Change

Ability to change from full stroke to short stroke or vice versa is given to the hammerman by the Ceco-Drop short stroke control, announced by Chambersburg Engineering Co., Chambersburg, Pa. The air-operated dog which is attached to the rocker controlling the action of the valve can be applied to any Ceco-Drop hammer of 1000 pounds or more. Pressure on a pushbutton on the treadle changes the stroke.

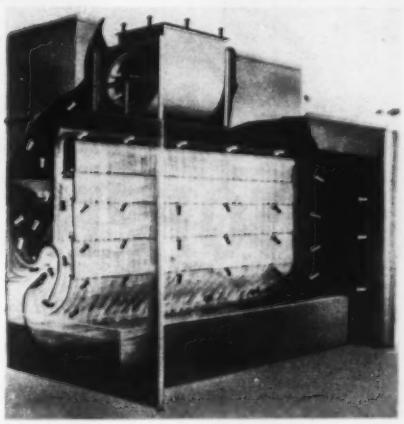
Unit can be arranged so that the short stroke is the normal stroke with pressure on the pushbutton changing to long stroke or the reverse order may be set up. Sequence of blows is uninterrupted. Jobs which require a drag on the boards in a board drop hammer may be performed with the short stroke control, but there is no drag as both short and full strokes fall freely.

Check No. 3 on Reply Card for more Details

Water Washes Out Paint

Intake of paint laden air through the water curtain is made possible by a new type of flood sheet for Roto-Wash spray booths made by Newcomb-Detroit Co., 5741 Russell, Detroit 11, Mich. This not only increases the amount of intake area but also assures more efficient intake because of more uniform air flow inside the spray booth enclosure.

Booth itself provides greater trapping of paint laden air due to the fact that it draws the air into the booth at the top and bottom of the water curtain. Air is drawn through the water curtain and into the washing chamber through a series of horizontal slots extending across the face of the flood sheet

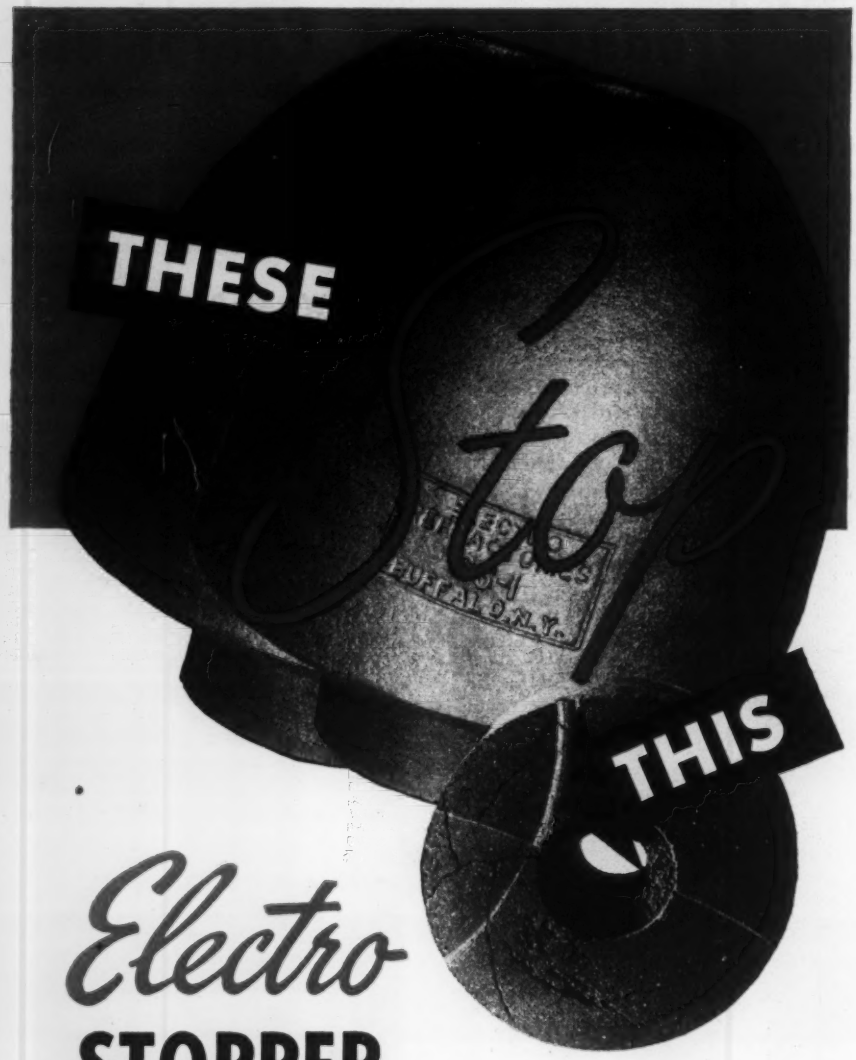


which is hinged at the top for easy access to all interior surfaces. If desired, the spray booth can also be supplied with conventional solid flood sheet.

Check No. 4 on Reply Card for more Details

Truck Has Dynatork Drive

Industrial Truck Division, Clark Equipment Co., Battle Creek, Mich., announces that its gas Carloader fork-lift truck is available with the Dynatork drive which transmits engine power to the drive wheels by magnetic induction through an air gap. Truck has no friction-type clutch and the conventional transmission is replaced by a constant-mesh, 2-speed forward and reverse gearing. Drive eliminates jerks, shifting of gears when operating in close



Electro
STOPPER
HEADS

This unretouched photo of a cross section of a standard clay graphite Stopper Head shows the leakage-source cracks which develop under thermal shock to cause trouble.

Send today for Bulletin S-750 which gives detailed facts about our newest composition Stopper Head that does not develop leakage-source cracks; assures cleaner shut-offs; doesn't spall; resists abrasion; has high softening point; great cold strength; exceptional hot load-bearing capacity; proportioned thermal conductivity; and Electro's well known uniformity and dependability. For open hearth, steel foundry and electric furnace melting. It's a ten strike! Get Bulletin S-750 now. Read its trouble-ending story.

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K-380

Electro SINCE 1919

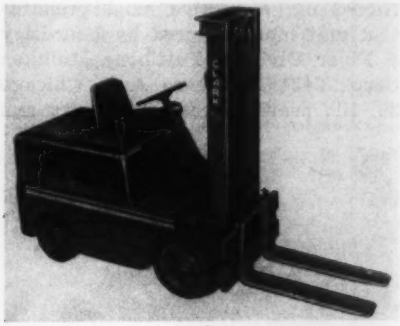
Electro Refractories & Alloys Corporation

WEST COAST WAREHOUSE, LOS ANGELES

344 DELAWARE AVE. BUFFALO 2, N. Y.

quarters and permits inching for maneuvering in tight places.

Direction of travel is reversed by a finger-tip control lever mounted on the steering column. The power-transmission device permits reversal of direction without first bringing



the machine to full stop. Direction-control lever is automatically returned to neutral when the driver leaves his seat. It cannot be moved from this position until he resumes his seat or until equivalent weight depresses the seat to the unlocking point.

Check No. 5 on Reply Card for more Details

Speeds Wire Hole Drilling

Drilling of wire holes in hex heads may be speeded up by a machine developed by Govro-Nelson Co., 1933 Antoinette, Detroit 8, Mich. It employs three model HH automatic units which drill three holes at one time. Part is then turned and the three units are operated a second time to complete the six holes.

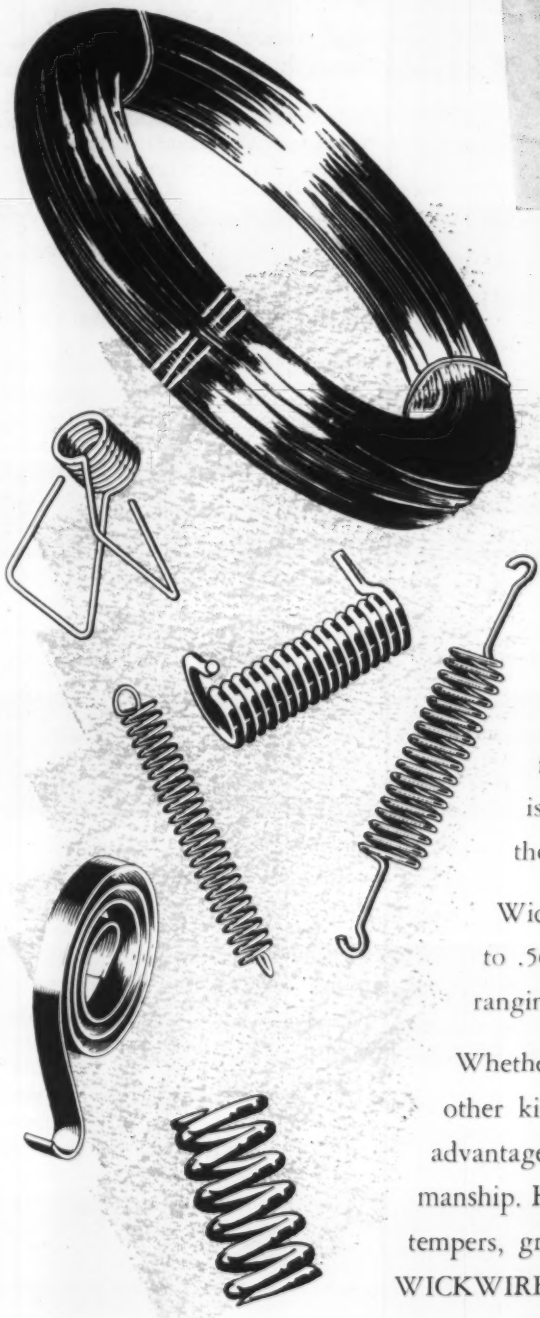
Machine can, with minor changes, be adapted to the drilling of multiple holes in other parts of similar size and character. In one operation six No. 50 wire holes were drilled in a cap screw with a hardness of 25 Rockwell C at the rate of 288 pieces per hour or 1728 holes.

Check No. 6 on Reply Card for more Details

Truck Mounted Cranes

Unit Crane & Shovel Corp., Milwaukee 14, Wis., is producing two truck cranes, models 1520T and 1014, with a lifting capacity range of 20 and 10 tons respectively and ¾ and ½-yard in excavator service. Model 1520T is mounted on a 3-axle tandem drive crane carrier. Walking beam supports on rear axles equalize weight distribution and allow all rear wheels to have constant contact when traveling on uneven terrain. Wheelbase is 184 inches and overall width is 8 feet. Machine has Bendix-Westinghouse air steering which makes possible one man con-

OIL TEMPERED WIRE



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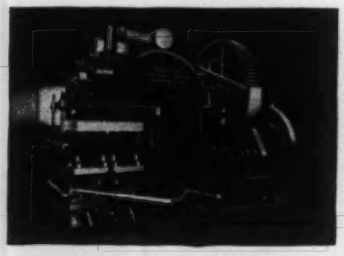
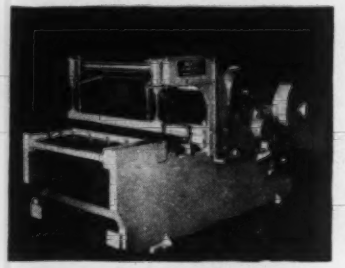
SALES OFFICES—Atlanta • Boston • Buffalo • Chicago • Denver • Detroit • New York • Philadelphia

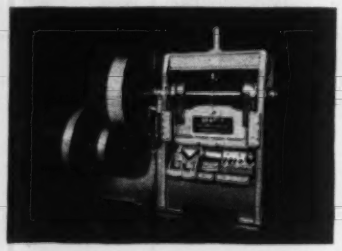
PACIFIC COAST SUBSIDIARY—The California Wire Cloth Corp., Oakland 6, Cal.



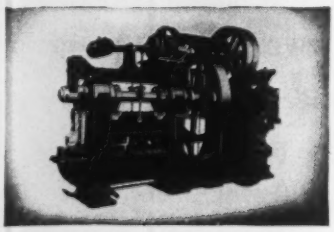
BEATTY No. 11-B Heavy Duty Punch widely used in the railroad industry.



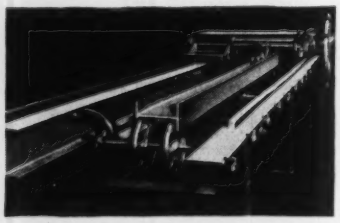
BEATTY Horizontal Multiple Punch for flange punching of long, wide sheets.



BEATTY Guillotine Bar Shear shears angles, rounds, bars and squares without changing tools.



BEATTY CoPunShear — one compact unit does coping, punching, shearing.



BEATTY Spacing Table handles flange and web punching without roll adjustment.

BEATTY
BUILT MEANS
BETTER BUILT

BEATTY *engineered* means better *engineered* to handle a specific metal working job. That is why you'll find custom-built BEATTY machines in hundreds. of important plants — forming, bending, flanging, punching, extruding, shaping, bulldozing.

This broad BEATTY experience is your assurance of expert counsel, advanced engineering, quality construction. This experience is assurance that BEATTY engineers are most apt to come up with the answer to your problem.

There is a better way to handle any heavy metal fabricating problem. Let us help you find that better way.

HYDRAULIC HEAVY METAL WORKING EQUIPMENT

BEATTY MACHINE AND MFG. COMPANY
HAMMOND, INDIANA

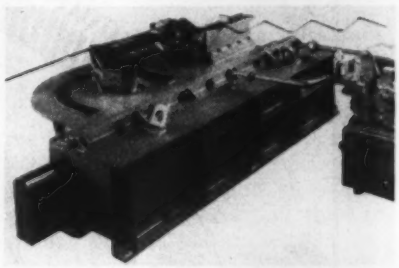
trol of both truck and crane units. Either gasoline or diesel engines are available.

Like the previous model, the 1014 crane has a 35-foot boom. One man control may also be applied with the addition of air-power steering. Similar power arrangements are available. It has five speeds forward, one reverse, with 2-speed auxiliary transmission extending the total speeds to ten forward and two reverse. Both models have a 2-position mounting of the upper structure: Forward position for maximum crane capacity; rear position for maximum working range in excavating operations.

Check No. 7 on Reply Card for more Details

Web Bar Bending Machine

Wm. K. Stamets Co., Pittsburgh 22, Pa. is producing a web bar bending machine for bending reinforcing bars such as used in reinforced concrete construction and in fabricated beams. The No. 2 machine is capable of bending bars up to and including ⅞-inch in diameter. Arms are adjustable and will make bends



to a minimum center distance of 7⅜ inches. Bending arms have replaceable guides.

Arms are actuated hydraulically and are equipped with air-operated ejectors for removing the bar after the bed is made. Bars may be bent singly or up to four at one time, depending upon the diameter. Machine operates at the rate of six strokes per minute and is offered with hydraulic pump unit, motor and electrical controls.

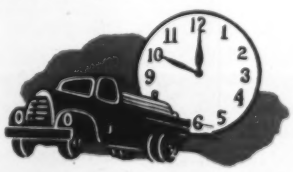
Check No. 8 on Reply Card for more Details

Converts Air Motor to Press

A standard air motor, made by Bellows Co., 222 W. Market St., Akron 3, O., may be converted into an air press suitable for a wide range of light to medium pressing operations such as riveting, stamping, staking, pressing, marking and assembling. Any one of four motors, models BM-1, BM-2, BM-5 or BSSM-

...IT'S TIME TO CALL LEVINSON

It was 4:15 p.m., Thursday, July 27, when we received an emergency call from a large steel producing company in Pittsburgh. They needed a small quantity of special bulb angles because of a mill break-down. Steel had to be on the job by Friday morning.... *and it was!* • At exactly 10:00 a.m. Friday, this material had been cut and prepared and delivered to their truck.



That's the kind of service you can expect from Levinson. When minutes count, when it's special material you want, it's good to know you can depend on Levinson to have it in stock . . . and to get it there in time!

LSS-6

Levinson

STEEL SALES CO.

20TH AND WHARTON-STS., S. S.

PITTSBURGH, PA.

5, can be nose-mounted on the arbor stand in less than 2 minutes.

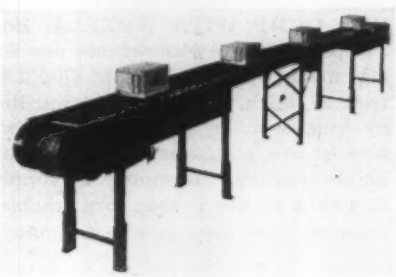
Stand is built to take rough punishment, the upright arbor being a rigid box-type casting. Top flat surface has sufficient space for mounting a limit switch for controlling motors

equipped with Electroaire valves for electrical operation. Bottom of the upright is machined flat and drilled for mounting on the base plate which is made of 1½-inch thick steel plate. Base measures 6 x 13 inches from the useable area of 6 x 9 inches.

Check No. 9 on Reply Card for more Details

Live Roller Conveyor

Distributed loads up to 2 tons may be handled by live roller horizontal conveyor which combines Rapid Roller carrying surfaces with a power belt drive, a development of Rapids-Standard Co. Inc., 342 Rapistan



Bldg., Grand Rapids 2, Mich. Available in lengths up to 150 feet, the unit is designed for moving materials to and from inspection, labeling, assembly or loading operations. Materials can be halted anywhere on the line without stopping the conveyor or interfering with flow of goods to this point.

Conveyor consists of a drive unit and a tail section, made of 10-gage,

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MAINTAIN PEAK OUTPUT with Pheoll precision-made screws, bolts and nuts—they will speed your assembly work and improve product appearance.

INSURE PRODUCT PERFORMANCE with Pheoll quality screws, bolts and nuts—standardize on these dependable industrial fasteners.

HUGE MANUFACTURING FACILITIES assure rapid production of both standard and special fasteners.

SINGLE SOURCE OF SUPPLY for screws, bolts and nuts in different sizes, types and metals.

OVERNIGHT DELIVERY to principal cities from centrally-located Pheoll factory and warehouses.

FACTS ABOUT Pheoll YOU SHOULD KNOW

- One of the nation's leading producers of industrial fasteners.
- Pheoll products are widely used in part assembly when quality is of prime importance.
- Men who produce Pheoll industrial fasteners are highly trained and experienced craftsmen.
- All products are manufactured under rigid quality control standards.
- Constant product inspection from laboratory metal analysis, through production and final finish is your assurance of precision made, trouble-free screws, bolts and nuts.

Write for this free Bulletin

Pheoll

MANUFACTURING COMPANY

SCREWS • BOLTS • NUTS

8-inch deep steel channel frame. The two units are coupled by Rapid-Roller sections with an upper level of carrier rollers and a lower level of adjustable pressure rollers. An 8-inch canvas belt between the two levels serves as a friction drive for the surface rollers. Unit is offered in four standard widths from 15 to 24 inches; length can be changed by adding or removing intermediate sections and rearranging support stands.

Check No. 10 on Reply Card for more Details

Power Pipe Machine

Either a wheel and roller cutoff or knife cutoff is offered on the No. 999 Super model 2-inch power pipe machine made by Toledo Pipe Threading Machine Co., Toledo, O. With wheel cutoff, the cutter head has two rollers and one cutter wheel which is self-centering and easily fed by handwheel. With the knife cutoff, machine is furnished with four cutter knives which leave a straight square-end cut without burr. Blades are fed through a scroll by a small handwheel and may be resharpened many times.

With either type of cutoff, a 2-inch pipe is severed in 10 seconds. The Super model, with quick-opening die heads, threads 2-inch pipe in 22 seconds. A flexible oil line is also incorporated. Instant change from cutting to threading and vice versa, quick change of die heads, no rear checking, high speed cutting and threading all contribute to high production. A 12-tooth cone type fluted reamer swings into position. Machine is powered by a ½-hp heavy duty, 115 v ac-dc motor.

Check No. 11 on Reply Card for more Details

• • •

PRINTS COILED SHEETS: Pannier Corp., Pittsburgh 12, Pa., has developed a new high speed automatic sheet and strip printer to print sheet steel as it is being coiled. It will also print flat sheet, strip and other flat surfaces at a rate of 200 fpm and permits a complete die change in 30 seconds.

Check No. 12 on Reply Card for more Details

CAGELESS ROLLER BEARING: Designated as the Guiderol bearing, a cageless roller bearing that eliminates roller skewing is introduced by McGill Mfg. Co., Valparaiso, Ind. Outer race of the bearing is constructed with a tapered guide rail on the inside diameter of the outer race and a retaining ring is snapped over the opposite side of roller grooves to make the assembly self-contained.

Check No. 13 on Reply Card for more Details

RADIATION COUNTER: For detection and counting of alpha, beta and gamma particles, a new universal scintillation counter is offered by General Electric's Special Products Division, Schenectady 5, N. Y. Sampling chamber can accommodate specimens up to 2 inches in diameter.

Check No. 14 on Reply Card for more Details

METALLIZING MATERIAL: Sprabond wire, a new self-bonding metallizing material from Metallizing Engineering Co. Inc., Long Island City, N. Y., provides long-wearing bearing surface. Only three operations are required to apply it: (1) Part is cleaned or under cut, (2) Sprabond wire applied, (3) surface finish ground.

Check No. 15 on Reply Card for more Details

ELECTRIC POWERGUNS: Two new electric powerguns for use where air power is not available are offered by Alemite Division, Stewart-Warner Corp., Chicago 14, Ill. Model 7170-R, the 25-pound gun, will deliver 14 ounces of light or medium lubricant per minute at 70° F. Model 7175-R, the 40-pound gun, handles all types of grease, fibrous, heavy or light.

Check No. 16 on Reply Card for more Details

GEARSHIFT DRIVE: Type R3AC, a 5 hp, 1200 rpm, selective-speed gearshift drive, is announced by Lima Electric Motor Co., Lima, O. It incorporates both primary and secondary gear reductions and is designed to individually motorize and drive machinery of various types that require a low range of selective operating speeds, combined with high radial load capacity.

Check No. 17 on Reply Card for more Details

END DUMP WITH WHEELS: End dumps equipped with wheels are being made by Palmer-Shile Co., Detroit 27, Mich. Units may be handled by platform or fork truck. Two wheels are stationary and two are swivel casters. Dumping is simplified by a rocker geared to a track.

Check No. 18 on Reply Card for more Details

MAKES SPACE FLEXIBLE: Arc welded rack sections designed for rapid assembly by means of sliding joints, are offered by Lewis-Shepard Products Inc., Watertown 72, Mass., to make storage rack systems flexible. No bolts are used and sections are self-nesting.

Check No. 19 on Reply Card for more Details

BELT WITH CONTROLLED STRETCH: A new flat leather belt with controlled stretch that prevents permanent elongation of the belt under load and thereby eliminates slipping has been developed by S. R. Sikes Co., Minneapolis, Minn. Called Cordan, the belting is reinforced with synthetic cords placed between leather plys by a special process.

Check No. 20 on Reply Card for more Details

MOUNTED MAGNIFIER: The magnet mounted magnifier offered by Miller Co., Waseca 10, Minn., consists of a powerful magnifying glass mounted on a sturdy supporting post to which is attached a high strength Alnico magnet. Intended for reading fine scales, magnet holds magnifier firmly attached to any steel or iron surface.

Check No. 21 on Reply Card for more Details

LESS NOISE: Known as SOA series, a new air intake Snubber is introduced by Burgess-Manning Co., Libertyville, Ill., for installations where noise rather than air surge is the major problem in internal combustions engines, compressors and blowers. Unit checks incoming pulsations of air so that the oscillating air flow that causes pumping noise is smoothed into a more unidirectional flow and noise is reduced.

Check No. 22 on Reply Card for more Details

RESISTS CORROSIVE ATMOSPHERE: Airpak, developed by Conoflow Corp., Philadelphia 3, Pa., is a combination of regulator, filter and dripwell in a single compact unit. Constructed entirely of brass and stainless steel, it provides maximum resistance to corrosive atmospheres. Unit is available in reduced pressure ranges of 0-25, 0-50, 0-125 psig.

Check No. 23 on Reply Card for more Details

ROTARY PUMP: Designated as the 3600 HBRV No. 7, a new pump rated at 300 gallons per minute, is announced by Geo. D. Roper Corp., Rockford, Ill. It may be driven by geared head motor, gasoline engine or truck power take-off. It has the venturi suction and discharge principle which spreads the liquid over wide helical gears.

Check No. 24 on Reply Card for more Details

FOR MORE INFORMATION
on the new products and equipment in this section, fill in a card. It will receive prompt attention.

Market Summary

PENDING establishment of a government-sponsored allocation system, steel consumers are pressing even harder for tonnage. But they are meeting with stiffer resistance from producers who are practically sold out for the remainder of the year. Only for national emergency work are buyers able to make noticeable progress getting additional tonnage on mill books, and then only after requirements are scrutinized. A little tonnage is available in the premium markets but this represents a drop-in-the-bucket compared with consumption.

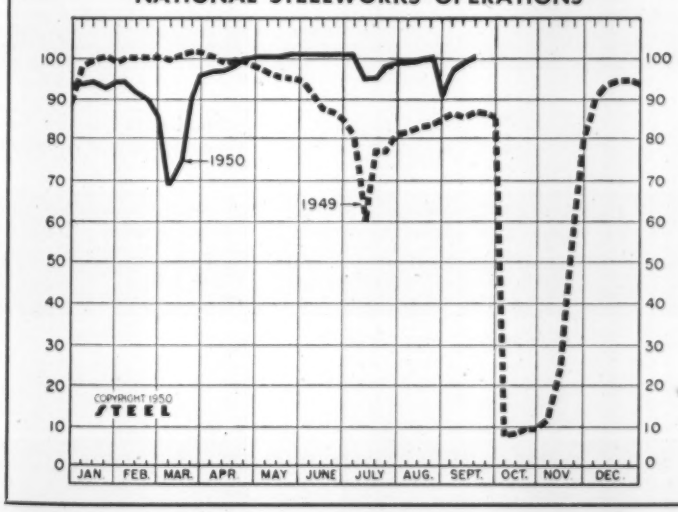
SUPPLY—Except for relatively minor products, producers are sold out for the rest of the year. They will enter fourth quarter with unusually large carryover and indications are at least one month's output will be required to take care of the overflow. Generally, the mills have not opened books for first quarter, 1951, business, an exception being cold-drawn bars on which some sellers have accepted commitments. Some wire items can be had for shipment before yearend. Wire rope, which has been in comparatively sluggish demand, is reported moving in better volume as are tool steels which also have been slow movers. All major products are in short supply, and specialties, such as stainless and alloys, are tightening noticeably. This latter situation is in part attributable to the stringency in nickel supply.

DEMAND—Steel production is pushed to the limit of available facilities but the steelmakers are falling behind demand steadily. Plate requirements far exceeds current supply and government allocation is expected to hit this product quickly because of large railroad car and military tank needs. Structural shapes are scarce but fabricators are pressing the market less actively because of their soldup position and the season. Merchant bars are moving into consumption at a terrific clip, but consumers' needs are far from satisfied. The shortage of bars is preventing expansion of some operations. Sheet buyers are wrestling with a procurement problem as critical as that of two years or so ago. Their frenzied efforts to obtain additional tonnage are meeting with little success. Tonnage available in the premium markets is limited and warehouse stocks are rapidly nearing the vanishing point. Steadily growing scarcity of pig iron is forcing foundry operators to increase the scrap ratio in their melts and use more foreign iron.

PRODUCTION— Steel operations are booming at capacity pace. Last week the national ingot rate went up 2.5 points to 101 per cent of capacity, highest since week ended July 1. At Pittsburgh the rate rose 3.5 points to 101, at Chicago, 1 point to 101.5, at Youngstown, 3 points to 106, at Wheeling, ½ point to 95.5, at Cleveland 6 points to 101, in New England, 14 points to 79, Cincinnati, 3 points to 106, in St. Louis, 13 points to 91. At Detroit the rate fell 2 points to 106, while in the Far West it slipped 2.5 points to 103.5 per cent. No changes were reported in eastern Pennsylvania at 98.5, in Buffalo at 104, and in Birmingham at 100.

PRICES—Strong price tone prevails in the finished steel and related markets but few changes of consequence were reported last week. Electric furnace silvery pig iron was advanced $4 to $5 per ton by one producer, foreign pig iron was quoted about $4 per ton above prices recently offered in the East, beehive foundry coke went up 50 cents per ton, and spiegeleisen was raised $4 per ton by an eastern producer. Prices on steelmaking scrap held steady the composite price holding at $41.08 last week, but a strong uptrend was in evidence on foundry and railroad grades. STEEL's weighted index on finished steel is unchanged at 156.99, as is the arithmetical composite at $94.50. Pig iron is holding, with No. 2 foundry, $46.85, basic, $45.97, and malleable, $47.49.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

Percentage of Capacity Engaged at Leading Production Points

	Week Ended Sept. 16	Change	Same Week 1949	Same Week 1948
Pittsburgh	101	+ 3.5*	82	93.5
Chicago	101.5	+ 1*	93.5	96
Eastern Pa.	98.5	0	80	93
Youngstown	106	+ 3	95	103
Wheeling	95.5	+ .5	98	95
Cleveland	101	+ 6	99	90
Buffalo	104	0	98.5	104
Birmingham	100	0	100	100
New England	79	+14	74	83
Cincinnati	106	+ 3	96	102
St. Louis	91	+13	89.5	91.5
Detroit	106	— 2	100	100
Western	103.5	— 2.5	76	..
Estimated national rate	101	+ 2.5	86.5	96

Based on weekly steelmaking capacity of 1,906,267 net tons for first half and 1,926,803 second half, 1950; 1,843,516 net tons for 1949; 1,802,476 net tons for 1948. *Change from revised rate.

News Summary—p. 75 *Production-Engineering News—p. 105*

Composite Market Averages

	Sept. 14 1950	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
FINISHED STEEL INDEX, Weighted:					
Index (1935-39 av.=100)	156.99	156.99	156.99	152.52	101.87
Index in cents per lb. ..	4.253	4.253	4.253	4.132	2.760
ARITHMETICAL PRICE COMPOSITES:					
Finished Steel, NT	$94.50	$94.50	$94.50	$91.55	$58.27
No. 2 Fdry. Pig Iron, GT	46.85	46.85	46.85	46.10	24.67
Basic Pig Iron, GT	45.97	45.97	45.97	45.60	24.00
Malleable Pig Iron, GT..	47.49	47.49	47.49	47.27	25.29
Steelmaking Scrap, GT..	41.08	41.08	40.67	26.92	19.17

Weighted finished steel index based on average shipments and Pittsburgh district prices of the following 14 representative products during 5-year base period 1935-39. Structural shapes, plates, rails, hot-rolled and cold-finished bars, pipe, wire, nails, tin plate, hot and cold-rolled sheets, galvanized sheets, hot and cold-rolled strip. For complete explanation see STEEL, Sept. 19, 1949, p. 54.

Arithmetical steel price composite based on same products as the weighted finished steel index with the exception of rails, cold-finished bars, galvanized sheets and hot-rolled strip.

Basic and No. 2 foundry pig iron composites are based on average prices at Pittsburgh, Bethlehem, Birmingham, Buffalo, Chicago, Cleveland, Granite City, Youngstown. Malleable composite based on same points, except Birmingham.

Steelmaking scrap composite based on average prices of No. 1 heavy melting steel at Pittsburgh, Chicago and Philadelphia.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED MATERIALS

	Sept. 14 1950	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bars, H.R., Pittsburgh....	3.45	3.45	3.45	3.35	2.25
Bars, H.R., Chicago	3.45	3.45	3.45	3.35	2.25
Bars, H.R., del. Philadelphia	3.93	3.93	3.93	3.83	2.57
Bars, C.F., Pittsburgh	4.10–15	4.10–15	4.10–15	3.95–4.00	2.75
Shapes, Std., Pittsburgh ..	3.40	3.40	3.40	3.25	2.10
Shapes, Std., Chicago	3.40	3.40	3.40	3.25	2.10
Shapes, del. Philadelphia..	3.46	3.46	3.46	3.50	2.215
Plates, Pittsburgh	3.50	3.50	3.50	3.40	2.25
Plates, Chicago	3.50	3.50	3.50	3.40	2.25
Plates, Coatesville, Pa. ...	3.90	3.90	3.90	3.50	2.25
Plates, Sparrows Point, Md.	3.50	3.50	3.50	3.40	2.25
Plates, Claymont, Del. ...	3.90	3.90	3.60	3.50	2.25
Plates, del. Philadelphia ..	3.84	3.84	3.69	3.59	2.30
Sheets, H.R., Pittsburgh..	3.35	3.35	3.35	3.25	2.20
Sheets, H.R., Chicago	3.35	3.35	3.35	3.25	2.20
Sheets, C.R., Pittsburgh ..	4.10	4.10	4.10	4.00	3.05
Sheets, C.R., Chicago	4.10	4.10	4.10	4.00	3.05
Sheets, C.R., Detroit	4.30	4.30	4.30	4.20	3.15
Sheets, Galv., Pittsburgh..	4.40	4.40	4.40	4.40	3.70
Strip, H.R., Pittsburgh ..	3.50	3.50	3.50	3.25	2.10
Strip, H.R., Chicago	3.25	3.25	3.25	3.25	2.10
Strip, C.R., Pittsburgh	4.15–50	4.15–50	4.15–50	4.00	2.80
Strip, C.R., Chicago	4.30	4.30	4.30	4.00–15	2.90
Strip, C.R., Detroit	4.35–95	4.35–95	4.35–95	4.20–25	2.90
Wire, Basic, Pittsburgh ..	4.50	4.50	4.50	4.15	2.75
Nails, Wire, Pittsburgh ...	5.30	5.30	5.30	5.15	2.90
Tin plate, box, Pittsburgh.	$7.50	$7.50	$7.50	$7.75	$5.00

SEMIFINISHED

Billets, forging, Pitts. (NT)	$63.00	$63.00	$63.00	$61.00	$42.00
Sheet bar, mill (NT)	58.00	58.00	58.00	60.00	36.00
Wire rods, $\frac{7}{32}$-$\frac{9}{16}$", Pitts...	3.85	3.85	3.85	3.40	2.15

PIG IRON, Gross Ton

Bessemer, Pitts.	$47-$50	$47-$50	$47-$50	$47.00	$25.50
Basic, Valley	46.00	46.00	46.00	46.00	24.50
Basic, del. Phila.	50.39	50.39	50.39	49.44	26.34
No. 2 Fdry, Pitts.	49.50	49.50	49.50	46.50	25.00
No. 2 Fdry, Chicago	46.50	46.50	46.50	46.50	25.00
No. 2 Fdry, Valley	46.50	46.50	46.50	46.50	25.00
No. 2 Fdry, del. Phila. ...	50.89	50.89	50.89	49.94	26.84
No. 2 Fdry, Birm.	42.38	42.38	42.38	39.38	21.38
No. 2 Fdry (Birm.) del. Cin.	49.08	49.08	49.08	45.43	25.06
Malleable, Valley	46.50	46.50	46.50	46.50	25.00
Malleable, Chicago	46.50	46.50	46.50	46.50	25.00
Charcoal, Lyles, Tenn. ...	60.00	60.00	60.00	66.00	33.00
Ferromanganese, Etna, Pa.	175.00	175.00	175.00	175.00	140.33*

* Delivered, Pittsburgh.

SCRAP, Gross Ton

No. 1 Heavy Melt. Pitts..	$44.00	$44.00	$46.00	$29.75	$20.00
No. 1 Heavy Melt. E. Pa. .	39.25	39.25	37.50	24.50	18.75
No. 1 Heavy Melt, Chicago	40.00	40.00	38.50	26.50	18.75
No. 1 Heavy Melt. Valley..	43.75	43.75	46.50	29.50	20.00
No. 1 Heavy Melt. Cleve. .	43.25	41.25	43.25	25.00	19.50
No. 1 Heavy Melt. Buffalo.	41.50	39.75	39.75	26.25	19.25
Rails, Rerolling, Chicago..	59.50	59.50	56.50	41.50	22.25
No. 1 Cast, Chicago	49.50	49.50	49.00	41.50	20.00

Coke, Net Ton

Beehive, Furn., Connlsvl...	$14.25	$14.25	$14.25	$13.25	$7.50
Beehive, Fdry., Connlsvl...	16.00	15.50	15.50	15.75	8.25
Oven Fdry., Chicago	21.00	21.00	21.00	20.00	13.35

NONFERROUS METALS

Copper, del. Conn.	22.50-24.50	22.50-24.50	22.50	17.625	12.00
Zinc, E. St. Louis	17.50	17.50	15.00	10.00	8.25
Lead, St. Louis	15.80	14.80	12.80	14.925	6.35
Tin, New York 103.50		99.00	101.00	103.00	52.00
Aluminum, del.	17.50	17.50	17.50	17.00	15.00
Antimony, Laredo, Tex. ..	32.00	28.50	24.50	38.50	14.50
Nickel, refinery, duty paid.	48.00	48.00	48.00	40.00	35.00

Pig Iron

For key to producing companies, turn next page.
Minimum delivered prices do not include 3% federal tax.

PIG IRON, Gross Ton

	Basic	No. 2 Foundry	Malleable	Bessemer
Bethlehem, Pa. B2	$48.00	$48.50	$49.00	$49.50
Brooklyn, N.Y., del.	....	52.79	53.29	....
Newark, del.	50.63	51.13	51.63	52.13
Philadelphia, del.	50.39	50.89	51.39	51.89
Birmingham District				
AlabamaCity, Ala. R2	41.88	42.38	....	....
Birmingham R2	41.88	42.38	....	....
Birmingham S9	41.88	42.38	....	....
Woodward, Ala. W15	41.88	42.38	....	....
Cincinnati, del.	....	49.08	....	....
Buffalo District				
Buffalo H1, R2	46.00	46.50	47.00	....
Tonawanda, N.Y., W12	46.00	46.50	47.00	....
N. Tonawanda, N.Y., T9	....	46.50	47.00	....
Boston, del.	55.26	55.76	56.20	....
Rochester, N.Y., del.	48.63	49.13	49.63	....
Syracuse, N.Y., del.	49.58	50.08	50.58	....
Chicago District				
Chicago I-3	46.00	46.50	46.50	47.00
Gary, Ind. C3	46.00	....	46.50	....
IndianaHarbor, Ind. I-2	46.00	....	46.50	....
So. Chicago, Ill. W14, Y1	46.00	46.50	46.50	....
So. Chicago, Ill. C3	46.00	....	46.50	47.00
Milwaukee, del.	47.89	48.39	48.39	48.89
Muskegon, Mich., del.	....	51.98	51.98	....
Cleveland District				
Cleveland A7	46.00	46.50	46.50	47.00
Cleveland R2	46.00	46.50	46.50	....
Akron, del. from Cleve.	48.39	48.89	48.89	49.39
Lorain, O. N3	46.00	....	....	47.00
Duluth I-3	....	....	46.50	....
Erie, Pa. I-3	46.00	46.50	46.50	47.00
Everett, Mass. E1	....	50.50	51.00	....
Fontana, Calif. K1	52.00	52.50	....	....
Geneva, Utah G1	46.00	46.50	....	....
Seattle, Tacoma, Wash., del.	....	54.20	....	....
Portland, Oreg., del.	....	54.20	....	....
LosAngeles, SanFrancisco, del.	53.70	54.20	....	....
GraniteCity, Ill. M10	47.90	48.40	48.90	....
St. Louis, del. (inc. tax)	48.65	49.15	49.65	....
Ironton, Utah C11	46.00	46.50	....	....
LoneStar, Tex. L6	41.50	*42.00	42.00	....
Minnequa, Colo. C10	47.00	47.50	47.50	....
Pittsburgh District				
NevilleIsland, Pa. P6	....	49.50	49.50	50.00
Pitts., N.&S. sides, Ambridge, Aliquippa, del.	....	50.69	50.69	51.19
McKeesRocks, del.	....	50.45	50.45	50.95
Lawrenceville, Homestead, McKeesport, Monaca, del.	....	50.94	50.94	51.44
Verona, del.	....	51.40	51.40	51.90
Brackenridge, del.	....	51.63	51.63	52.13
Bessemer, Pa. C3	46.00	....	46.50	47.00
Clairton, Rankin, So. Duquesne, Pa. C3	46.00	....	....	....
McKeesport, Pa. N3	46.00	....	....	47.00
Sharpsville, Pa. S6	....	....	46.50	47.00
Steelton, Pa. B2	48.00	48.50	49.00	49.50
Steubenville, O. W10	46.00	....	....	....
Swedeland, Pa. A3	50.00	50.50	51.00	51.50
Toledo, O. I-3	46.00	46.50	46.50	47.00
Cincinnati, del.	51.01	51.51	....	....
Troy, N.Y., R2	48.00	48.50	49.00	49.50
Youngstown District				
Hubbard, O. Y1	46.00	46.50	46.50	....
Youngstown C3	46.00	....	....	47.00
Youngstown Y1	46.00	46.50	46.50	47.00
Mansfield, O., del.	50.26	50.76	50.76	51.26

* Low phos, southern grade.

PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si over base grade, 1.75-2.25%.

Phosphorus: Deduct 38 cents per ton for P content of 0.70% and over.

Manganese: Add 50 cents per ton for each 0.50% manganese over 1%, or portion thereof.

Nickel: Under 0.50% no extra; 0.50-0.74%, incl., add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.00-6.50% silicon; add $1.50 for each 0.5% Si to 11.50%)

Jackson, O. G2, J1	$57.00
Buffalo H1	58.25

ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1 for each 0.5% Mn over 1%; $1 for 0.045% max. P)

NiagaraFalls, N.Y. P15	$78.00
Keokuk, Iowa, Openhearth & Fdry. frt. allowed K2	82.00
Keokuk, Iowa, OH & Fdry., 12½ lb. piglets, frt. allowed K2...	86.00
Wenatchee, Wash., OH & Fdry., frt. allowed K2	82.00

CHARCOAL PIG IRON, Gross Ton

(Low phos. semi-cold blast; differential charged for silicon over base grade; also for hard chilling iron Nos. 5 & 6)

Lyles, Tenn. T3	$60.00

LOW PHOSPHOROUS PIG IRON, Gross Ton

Cleveland, intermediate, A7	$51.00
Steelton, Pa. B2	54.00
Philadelphia delivered	57.00
Troy, N.Y. R2	54.00

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Semifinished and Finished Steel Products

Mill prices as reported to STEEL Sept. 14, 1950; cents per pound except as otherwise noted. Changes shown in italics. Code numbers following mill points indicate producing company; key on next two pages.

INGOTS, Carbon, Forging (NT)

Detroit R7 ..... $50.00
Fontana,Calif. K1 ..... 76.00
Munhall,Pa. C3 ..... 50.00

INGOTS, Alloy (NT)

Detroit R7 ..... $51.00
Fontana,Calif. K1 ..... 77.00
Houston,Tex. S5 ..... 59.00
Midland,Pa. C18 ..... 51.00
Munhall,Pa. C3 ..... 51.00
So.Duquesne,Pa. C3 ..51.00

BILLETS, BLOOMS & Slabs Carbon, Rerolling (NT)

Bessemer,Pa. C3 ..... $53.00
Clairton,Pa. C3 ..... 53.00
Conshohocken,Pa. A3 ..62.00
Ensley,Ala. T2 ..... 53.00
Fairfield,Ala. T2 ..... 53.00
Fontana,Calif. K1 ..... 72.00
Gary,Ind. C3 ..... 53.00
Johnstown,Pa. B2 ..... 53.00
Lackawanna,N.Y. B2..53.00
Munhall,Pa. C3 ..... 53.00
So.Chicago,Ill. C3 ...53.00
So.Duquesne,Pa. C3 ...53.00

Carbon, Forging (NT)

Bessemer,Pa. C3 ..... $63.00
Buffalo R2 ..... 63.00
Canton,O. R2 ..... 63.00
Clairton,Pa. C3 ..... 63.00
Cleveland R2 ..... 63.00
Conshohocken,Pa. A3...68.00
Detroit R7 ..... 66.00
Ensley,Ala. T2 ..... 63.00
Fairfield,Ala. T2 ..... 63.00
Fontana,Calif. K1 ...82.00
Gary,Ind. C3 ..... 63.00
Geneva,Utah G1 ..... 63.00
Houston,Tex. S5 ..... 71.00
Ind.Harbor,Ind. I-2 ...63.00
Johnstown,Pa. B2 ..... 63.00
Lackawanna,N.Y. B2...63.00
LosAngeles B3 ..... 82.00
Munhall,Pa. C3 ..... 63.00
Seattle B3 ..... 82.00
So.Chicago C3,R2,W14.63.00
So.Duquesne,Pa. C3 ..63.00
So.SanFrancisco B3 ...82.00

Alloy (NT)

Bethlehem,Pa. B2 ..... $66.00
Buffalo R2 ..... 66.00
Canton,O. R2, T7 ..... 66.00
Conshohocken,Pa. A3..70.00
Detroit R7 ..... 66.00
Fontana,Calif. K1 ..... 85.00
Gary,Ind. C3 ..... 66.00
Houston,Tex. S5 ..... 74.00
Ind.Harbor,Ind. Y1 ...66.00
Johnstown,Pa. B2 ..... 66.00
Lackawanna,N.Y. B2..66.00
LosAngeles B3 ..... 86.00
Massillon,O. R2 ..... 66.00
Midland,Pa. C18 ..... 66.00
Munhall,Pa. C3 ..... 66.00
Sharon,Pa. S3 ..... 66.00
So.Chicago C3,R2,W14.66.00
So.Duquesne,Pa. C3 ..66.00
Warren,O. C17 ..... 66.00
Youngstown Y1 ..... 66.00

ROUNDS, SEAMLESS TUBE (NT)

Canton,O. R2 ..... $76.00
Cleveland R2 ..... 76.00
Fontana,Calif. K1 ....100.00
Gary,Ind. C3 ..... 76.00
Ind.Harbor,Ind. I-2 ...76.00
Massillon,O. R2 ..... 76.00
So.Chicago,Ill. R2 ....76.00
So.Duquesne,Pa. C3 ...76.00

SHEETS BARS (NT)

Fontana,Calif. K1 ....$86.00

SKELP

Aliquippa,Pa. J5 ..... 3.25
Munhall,Pa. C3 ..... 3.15
Warren,O. R2 ..... 3.15
Youngstown C3, R2 .... 3.15

WIRE RODS

AlabamaCity,Ala. R2 ..3.85
Buffalo W12 ..... 3.85
Cleveland A7 ..... 3.85
Donora,Pa. A7 ..... 3.85
Fairfield,Ala. T2 ..... 3.85
Fontana,Calif. K1 ..... 4.60
Houston,Tex. S5 ..... 4.25
Ind.Harbor,Ind. Y1 ...3.85
Johnstown,Pa. B2 ..... 3.85
Joliet,Ill. A7 ..... 3.85
LosAngeles B3 ..... 4.65
Minnequa,Colo. C10 ....4.10
Monessen,Pa. P7 ..... 3.85
No.Tonawanda,N.Y. B11.3.85
Pittsburg,Calif. C11 ....4.50
Portsmouth,O. P12 ..... 3.85
Roebling,N.J. R5 ..... 3.95
So.Chicago,Ill. R2 ..... 3.85
SparrowsPoint,Md. B2..3.95
Sterling,Ill.(1) N15 ....3.85
Struthers,O. Y1 ..... 3.85
Torrance,Calif. C11 ....4.65
Worcester A7 ..... 4.15

STRUCTURALS

Carbon Steel Stand. Shapes

AlabamaCity,Ala. R2 ..3.40
Aliquippa,Pa. J5 ..... 3.40
Bessemer,Ala. T2 ..... 3.40
Bethlehem,Pa. B2 ..... 3.45
Clairton,Pa. C3 ..... 3.40
Fairfield,Ala. T2 ..... 3.40
Fontana,Calif. K1 ....4.00
Gary,Ind. C3 ..... 3.40
Geneva,Utah G1 ..... 3.40
Houston,Tex. S5 ..... 3.80
Ind.Harbor,Ind. I-2 ....3.40
Johnstown,Pa. B2 ..... 3.45
KansasCity,Mo. S5 ....4.00
Lackawanna,N.Y. B2 ..3.45
LosAngeles B3 ..... 4.00
Minnequa,Colo. C10 ....3.75
Munhall,Pa. C3 ..... 3.40
Niles,Calif.(22) P1 ....4.02
Phoenixville,Pa. P4 ....4.25
Portland,Oreg. O4 ....4.05
Seattle B3 ..... 4.05
So.Chicago,Ill. C3, W14.3.40
So.SanFrancisco B3 ....3.95
Torrance,Calif. C11 ....4.00
Weirton,W.Va. W6 ....3.40

Alloy Stand. Shapes

Clairton,Pa. C3 ..... 4.05
Fontana,Calif. K1 ....5.25
Munhall,Pa. C3 ..... 4.05
So.Chicago,Ill. C3 ....4.05

H.S., L.A. Stand. Shapes

Aliquippa,Pa. J5 ..... 5.15
Bessemer,Ala. T2 ..... 5.15
Bethlehem,Pa.(14) B2...5.20
Clairton,Pa. C3 ..... 5.15
Fairfield,Ala. T2 ..... 5.15
Fontana,Calif. K1 ....5.75
Gary,Ind. C3 ..... 5.15
Geneva,Utah G1 ..... 5.10
Ind.Harbor,Ind. I-2, Y1.5.15
Johnstown,Pa. B2 ..... 5.20
Lackawanna,N.Y.(14)B2 5.20
LosAngeles B3 ..... 5.75
Munhall,Pa. C3 ..... 5.15
So.Chicago,Ill. C3 ..... 5.15
So.SanFrancisco B3 ....5.70
Struthers,O. Y1 ..... 5.15

Wide Flange

Bethlehem,Pa. B2 ..... 3.45
Lackawanna,N.Y. B2 ..3.45
Munhall,Pa. C3 ..... 3.40
So.Chicago,Ill. C3 ....3.40

H.S., L.A. Wide Flange

Bethlehem,Pa. B2 ..... 5.20
Lackawanna,N.Y. B2 ..5.20
Munhall,Pa. C3 ..... 5.10
So.Chicago,Ill. C3 ....5.10

SHEET STEEL PILING

Ind.Harbor,Ind. I-2 ....4.20
Lackawanna,N.Y. B2 ..4.20
Munhall,Pa. C3 ..... 4.20
So.Chicago,Ill. C3 ..... 4.20
Weirton,W.Va. W6 ....4.20

BEARING PILES

Munhall,Pa. C3 ..... 3.40
So.Chicago,Ill. C3 ..... 3.40

PLATES,High-Strength Low-Alloy

Aliquippa,Pa. J5 ..... 5.35
Bessemer,Ala. T2 ..... 5.35
Clairton,Pa. C3 ..... 5.35
Cleveland J5, R2 ..... 5.35
Conshohocken,Pa. A3 ..5.35
Ecorse,Mich. G5 ..... 5.60
Fairfield,Ala. T2 ..... 5.35
Fontana,Calif. K1 ..... 5.95
Gary,Ind. C3 ..... 5.35
Geneva,Utah G1 ..... 5.35
Ind.Harbor,Ind. I-2, Y1.5.35
Johnstown,Pa. B2 ..... 5.35
Munhall,Pa. C3 ..... 5.35
Pittsburgh J5 ..... 5.35
Sharon,Pa. S3 ..... 5.35
So.Chicago,Ill. C3 ..... 5.35
SparrowsPoint,Md. B2..5.35
Warren,O. R2 ..... 5.35
Youngstown Y1 ..... 5.35

PLATES, Open-Hearth Alloy

Claymont,Del. W16 ....4.50
Coatesville,Pa. L7 ....4.80
Conshohocken,Pa. A3 ...4.55
Fontana,Calif. K1 ....5.40
Gary,Ind. C3 ..... 4.40
Johnstown,Pa. B2 ..... 4.40
Munhall,Pa. C3 ..... 4.40
Sharon,Pa. S3 ..... 4.40
So.Chicago,Ill. C3 ..... 4.40
SparrowsPoint,Md. B2 ..4.40

FLOOR PLATES

Cleveland J5 ..... 4.55
Conshohocken,Pa. A3 ...4.55
Harrisburg,Pa. C5 ....5.25
Ind.Harbor,Ind. I-2 ....4.55
Munhall,Pa. C3 ..... 4.55
So.Chicago,Ill. C3 ....4.55

PLATES (Universal Mill)

Fontana,Calif. K1 ....4.40

PLATES, Carbon A.R.

Fontana,Calif. K1 ....5.25

PLATES, Carbon Steel

AlabamaCity,Ala. R2 ..3.50
Aliquippa,Pa. J5 ..... 3.50
Ashland,Ky.(15) A10 ..3.50
Bessemer,Ala. T2 ..... 3.50
Clairton,Pa. C3 ..... 3.50
C.aymont,Del. W16 ....3.90
Cleveland J5 R2 ..... 3.50
Coatesville,Pa. L7 ....3.90
Conshohocken,Pa. A3 ..3.75
Ecorse,Mich. G5 ..... 3.75
Fairfield,Ala. T2 ..... 3.50
Fontana,Calif. K1 ....4.10
Gary,Ind. C3 ..... 3.50
Geneva,Utah G1 ..... 3.50
Harrisburg,Pa. C5 ....4.25
Houston,Tex. S5 ..... 3.90
Ind.Harbor,Ind. I-2, Y1..3.50
Johnstown,Pa. B2 ..... 3.50
Lackawanna,N.Y. B2 ..3.50
Minnequa,Colo. C10 ....4.30
Munhall,Pa. C3 ..... 3.50
Pittsburgh J5 ..... 3.50
Seattle B3 ..... 4.40
Sharon,Pa. S3 ..... 3.50
So.Chicago,Ill. C3, W14.3.50
SparrowsPoint,Md. B2 ..3.50
Steubenville,O. W10 ....3.50
Warren,O. R2 ..... 3.50
Weirton,W.Va. W6 ....3.50
Youngstown C3, R2, Y1.3.50

PLATES, Wrought Iron

Economy,Pa. B14 ....7.85

PLATES, Ingot Iron

Ashland,c.l.(15) A10 ...3.75
Ashland,lcl(15) A10 ...4.25
Cleveland,cl R2 ..... 4.10
Warren,O.cl R2 ..... 4.10

BARS, Hot-Rolled Carbon

AlabamaCity,Ala. R2 ..3.45
Aliquippa,Pa. J5 ..... 3.45
Alton,Ill(1) L1 ..... 3.45
Atlanta,Ga. A11 ..... 3.60
Bessemer,Ala. T2 ..... 3.45
Buffalo R2 ..... 3.45
Canton,O. R2 ..... 3.45
Clairton,Pa. C3 ..... 3.45
Cleveland R2 ..... 3.45
Ecorse,Mich. G5 ..... 3.65
Emeryville,Calif. J7 ....4.20
Fairfield,Ala. T2 ..... 3.45
Fontana,Calif. K1 ..... 4.10
Gary,Ind. C3 ..... 3.45
Houston,Tex. S5 ..... 3.85
Ind.Harbor,Ind. I-2, Y1.3.45
Johnstown,Pa. B2 ..... 3.45
KansasCity,Mo. S5 ....4.05
Lackawanna,N.Y. B2 ..3.45
LosAngeles B3 ..... 4.15
Milton,Pa. B6 ..... 3.45
Minnequa,Colo. C10 ....3.85
Niles,Calif. P1 ..... 4.17
N.Tonawanda,N.Y. B11.3.45
Pittsburg,Calif. C11 ....4.15
Pittsburgh J5 ..... 3.45
Portland,Oreg. O4 ....4.20
Seattle B3, N14 ..... 4.20
So.Chicago C3, R2, W14.3.45
So.Duquesne,Pa. C3 ....3.45
S.SanFran.,Cal. B3 ....4.20
Struthers,O. Y1 ..... 3.45
Torrance,Calif. C11 ....4.15
Weirton,W.Va. W6 ....3.45
Youngstown C3, R2 ....3.45

BAR SIZE ANGLES; S. SHAPES

Aliquippa,Pa. J5 ..... 3.45
Atlanta A11 ..... 3.60
Johnstown,Pa. B2 ..... 3.45
Lackawanna,N.Y. B2 ..3.45
Niles,Calif. P1 ..... 4.17
Pittsburgh(23) J5 ..... 3.45
Portland,Oreg. O4 ....4.20
SanFrancisco S7 ..... 4.00
Weirton,W.Va. W6 ....3.45

BAR SIZE ANGLES; H.R.CARBON

Bethlehem,Pa. B2 ..... 3.65

BARS, Hot-Rolled Alloy

Bethlehem,Pa. B2 ..... 3.95
Buffalo R2 ..... 3.95
Canton,O. R2, T7 ..... 3.95
Clairton,Pa. C3 ..... 3.95
Ecorse,Mich. G5 ..... 4.25
Fontana,Calif. K1 ..... 4.95
Gary,Ind. C3 ..... 3.95
Houston,Tex. S5 ..... 4.35
Ind.Harbor,Ind. I-2, Y1.3.95
Johnstown,Pa. B2 ..... 3.95
KansasCity,Mo. S5 ....4.55
Lackawanna,N.Y. B2 ..3.95
LosAngeles B3 ..... 5.00
Massillon,O. R2 ..... 3.95
Midland,Pa. C18 ..... 3.95
So.Chicago C3, R2, W14.3.95
So.Duquesne,Pa. C3 ...3.95
Struthers,O. Y1 ..... 3.95
Warren,O. C17 ..... 3.95
Youngstown C3 ..... 3.95

BAR SHAPES, Hot-Rolled Alloy

Clairton,Pa. C3 ..... 4.20
Fontana,Calif. K1 ..... 4.95
Gary,Ind. C3 ..... 4.20
Youngstown C3 ..... 4.20

BARS & SMALL SHAPES, H.R., High-Strength Low-Alloy

Aliquippa,Pa. J5 ..... 5.20
Atlanta A11 ..... 5.35
Bessemer,Ala. T2 ..... 5.20
Bethlehem,Pa. B2 ..... 5.20
Clairton,Pa. C3 ..... 5.20
Cleveland R2 ..... 5.20
Ecorse,Mich. G5 ..... 5.40
Fairfield,Ala. T2 ..... 5.20
Fontana,Calif. K1 ....6.25
Gary,Ind. C3 ..... 5.20
Ind.Harbor,Ind. I-2, Y1.5.20
Johnstown,Pa. B2 ..... 5.20
Lackawanna,N.Y. B2 ..5.20
LosAngeles B3 ..... 5.90
Pittsburgh J5 ..... 5.20
So.Duquesne,Pa. C3 ....5.20
So.SanFrancisco B3 ....5.95
Struthers,O. Y1 ..... 5.20
Youngstown C3 ..... 5.20

BARS, Cold-Finished Carbon

Aliquippa,Pa. K5 ..... 4.15
Ambridge,Pa. W18 ....4.15
BeaverFalls,Pa. M12,R2.4.15
Buffalo B5 ..... 4.15
Camden,N.J. P13 ..... 4.60
Carnegie,Pa. C12 ..... 4.15
Chicago W18 ..... 4.15
Cleveland A7, C20 ....4.15
Detroit P17 ..... 4.30
Donora,Pa. A7 ..... 4.15
Ecorse,Mich. G5 ..... 4.35
Elyria,O. W8 ..... 4.15
FranklinPark,Ill. N5 ...4.15
Gary,Ind. R2 ..... 4.15
Hammond,Ind. L2, M13.4.15
Hartford,Conn. R2 ....4.55
Harvey,Ill. B5 ..... 4.15
LosAngeles R2 ..... 5.55
Mansfield,Mass. B5 ....4.55
Massillon,O. R2, R8 ....4.15
Midland,Pa. C18 ..... 4.15
Monaca,Pa. S17 ..... 4.15
Newark,N.J. W18 ..... 4.55
Plymouth,Mich. P5 ....4.40
Pittsburgh J5 ..... 4.10
Putnam,Conn. W18 ....4.55
Readville,Mass. C14 ....4.55
St.Louis,Mo. M5 ..... 4.55
So.Chicago,Ill. W14 ....4.15
SpringCity,Pa.(5) K3 ..4.55
Struthers,O. Y1 ..... 4.15
Waukegan,Ill. A7 ..... 4.15
Youngstown F3, Y1 ....4.15

BARS, Cold-Finished Alloy

Aliquippa,Pa. K5 ..... 4.90
Ambridge,Pa. W18 ....4.90
BeaverFalls,Pa. M12 ...4.90
Bethlehem,Pa. B2 ..... 4.90
Buffalo B5 ..... 4.90
Canton,O. R2, T7 ..... 4.90
Carnegie,Pa. C12 ..... 4.90
Chicago W18 ..... 4.90
Cleveland A7, C20 ....4.90
Detroit P17 ..... 5.05
Donora,Pa. A7 ..... 4.90
Elyria,O. W8 ..... 4.90
Gary,Ind. R2 ..... 4.90
Hammond,Ind. L2, M13.4.90
Hartford,Conn. R2 ..... 5.20
Harvey,Ill. B5 ..... 4.90
Lackawanna,N.Y. B2 ..4.90
Mansfield,Mass. B5 ....5.20
Massillon,O. R2, R8 ....4.90
Midland,Pa. C18 ..... 4.90
Monaca,Pa. S17 ..... 4.90
Newark,N.J. W18 ..... 5.20
Plymouth,Mich. P5 ....5.10
So.Chicago,Ill. R2, W14.4.90
Struthers,O. Y1 ..... 4.90
Warren,O. C17 ..... 4.90
Waukegan,Ill. A7 ..... 4.90
Worcester,Mass. A7 ....5.20
Youngstown F3, Y1 ....4.90

RAIL STEEL BARS

ChicagoHts.(3,4)C2,I-2 .3.45
Dallas,Tex(4) S20 ....6.00
Franklin,Pa.(3, 4) F5..3.70
FortWorth,Tex.(26) T4..4.33
Huntngtn,W.Va.(3) W7.4.00
Marion,O(3) P11 ..... 3.70
Moline,Ill.(3) R2 ..... 3.55
Williamsport(3) S19 ...4.25

BARS, Wrought Iron

Economy,Pa.(S.R.) B14.8.60
Economy,Pa.(D.R.)B14 11.00
Economy(Staybolt)B14 11.30
Dover,N.J.(Staybolt)U1 15.00
Dover(Eng.Bolt) U1 ..13.50
Dover(Wrgt.Iron) U1 ..12.25
Mck.Rks.(S.R.) L5 ....8.60
McK.Rks.(D.R.) L5 ..11.25
Mck.Rks.(Staybolt) L5.12.75

BARS, Reinforcing (Fabricators)

AlabamaCity,Ala. R2 ...3.45
Alton,Ill.(6) L1 ..... 3.45
Atlanta A11 ..... 3.60
Buffalo R2 ..... 3.45
Cleveland R2 ..... 3.45
Emeryville,Calif. J7 ...4.20
Fairfield,Ala. T2 ..... 3.45
Fontana,Calif. K1 ..... 4.10
Gary,Ind. C3 ..... 3.45
Houston,Tex. S5 ..... 3.85
Ind.Harbor,Ind. I-2, Y1.3.45
Johnstown,Pa. B2 ..... 3.45
KansasCity,Mo. S5 ....4.05
Lackawanna,N.Y. B2 ..3.45
LosAngeles B3 ..... 4.15
Milton,Pa. B6 ..... 3.45
Minnequa,Colo. C10 ....4.25
Niles,Calif. P1 ..... 4.17
Pittsburg,Calif. C11 ....4.15
Pittsburgh J5 ..... 3.45
Portland,Oreg. O4 ..... 4.20
SandSprings,Okla. S5 ..4.35
Seattle B3, N14 ..... 4.20
So.Chicago,Ill. R2 ....3.45
So.Duquesne,Pa. C3 ....3.45
So.SanFrancisco B3 ....4.20
SparrowsPoint,Md. B2 ..3.45
Struthers,O. Y1 ..... 3.45
Torrance,Calif. C11 ....4.15
Youngstown C3, R2 ....3.45

BARS, Reinforcing

(Fabricated; to Consumers)
Huntington,W.Va. W7 ..4.50
Johnstown, ¼-1" B2 ...4.35
LosAngeles B3 ..... 5.00
Marion,O. P11 ..... 4.50
Seattle B3, N14 ..... 5.10
So.SanFrancisco B3 .... 5.00
SparrowsPt., ¼-1" B2 ..4.35
Williamsport,Pa. S19 ..4.35

SHEETS, Hot-Rolled Steel (18 gage and heavier)

AlabamaCity,Ala. R2 ..3.35
Ashland,Ky.(8) A10 ...3.35
Butler,Pa. A10 ..... 3.35
Cleveland J5, R2 ..... 3.35
Conshohocken,Pa. A3 ...3.60
Detroit M1 ..... 4.15
Ecorse,Mich.(8) G5 ....3.55
Fairfield,Ala. T2 ..... 3.35
Fontana,Calif. K1 ..... 4.25
Gary,Ind. C3 ..... 3.35
Geneva,Utah G1 ..... 3.45
Ind.Harbor,Ind. I-2, Y1.3.35
Irvin,Pa. C3 ..... 3.35
Lackawanna,N.Y. B2 ..3.35
Munhall,Pa. C3 ..... 3.35
Pittsburg,Calif. C11 ....4.05
Pittsburgh J5 ..... 3.35
Sharon,Pa. S3 ..... 3.50
So.Chicago,Ill. W14 ....3.35
SparrowsPoint,Md. B2 ..3.35
Steubenville,O. W10 ....3.35
Torrance,Calif. C11 ....4.05
Warren,O. R2 ..... 3.35
Weirton,W.Va. W6 ....3.35
Youngstown C3, Y1 ....3.35

SHEETS, Hot-Rolled Carbon Steel (19 gage and lighter)

AlabamaCity,Ala. R2 ..4.50
Dover,O. R1 ..... 4.65
Ind.Harbor,Ind. I-2 ....4.40
Mansfield,O. E6 ..... 4.15
Niles,O. N12 ..... 4.10
Torrance,Calif. C11 ....5.15

SHEETS, H-R (14 ga., heavier) High-strength Low-Alloy

Cleveland J5, R2 ..... 5.05
Conshohocken,Pa. A3 ..5.05
Ecorse,Mich. G5 ..... 5.25
Fairfield,Ala. T2 ..... 5.05
Fontana,Calif. K1 ..... 6.74
Gary,Ind. C3 ..... 5.05
Ind.Harbor,Ind. I-2, Y1.5.05
Irvin,Pa. C3 ..... 5.05
Lackawanna(35) B2 ..5.05
Pittsburgh J5 ..... 5.05
Sharon,Pa. S3 ..... 5.05
So.Chicago,Ill. C3 ..... 5.05
SparrowsPoint(36) B2 ..5.05
Warren,O. R2 ..... 5.05
Weirton,W.Va. W6 ....5.05
Youngstown, C3, Y1 ....5.05

SHEETS, Cold-Rolled High-Strength Low-Alloy

Cleveland J5, R2 ..... 6.20
Ecorse,Mich. G5 ..... 6.40
Fontana,Calif. K1 ..... 7.05
Gary,Ind. C3 ..... 6.20
Ind.Harbor,Ind. I-2, Y1.6.20
Irvin,Pa. C3 ..... 6.20
Lackawanna(37) B2 ....6.20
Pittsburgh J5 ..... 6.20
SparrowsPoint(38) B2..6.20
Warren,O. R2 ..... 6.20
Weirton,W.Va. W6 ....6.20
Youngstown Y1 ..... 6.20

SHEETS, Cold-Rolled Steel (Commercial Quality)

Butler,Pa. A10	4.10
Cleveland J5, R2	4.10
Ecorse,Mich. G5	4.30
Fairfield,Ala. T2	4.10
Follansbee,W.Va. F4	5.10
Fontana,Calif. K1	5.00
Gary,Ind. C3	4.10
GraniteCity,Ill. G4	4.30
Ind.Harbor,Ind. I-2, Y1	4.10
Irvin,Pa. C3	4.10
Lackawanna,N.Y. B2	4.10
Middletown,O. A10	4.10
Pittsburg,Calif. C11	5.05
Pittsburgh J5	4.10
SparrowsPoint,Md. B2	4.10
Steubenville,O. W10	4.10
Warren,O. R2	4.10
Weirton,W.Va. W6	4.10
Youngstown Y1	4.10

SHEETS, Galv'd No. 10 Steel

AlabamaCity,Ala. R2	4.40
Ashland,Ky. (8) A10	4.40
Canton,O. R2	4.40
Delphos,O. N16	5.40
Dover,O. R1	4.75
Fairfield,Ala. T2	4.40
Gary,Ind. C3	4.40
GraniteCity,Ill. G4	4.60
Ind.Harbor,Ind. I-2	4.40
Irvin,Pa. C3	4.40
Kokomo, Ind. C16	4.50
MartinsFerry,O. W10	4.40
Niles,O. N12	4.65
Pittsburg,Calif. C11	5.15
SparrowsPoint,Md. B2	4.40
Steubenville,O. W10	4.40
Torrance,Calif. C11	5.15
Weirton,W.Va. W6	4.40

SHEETS, Galvanized No. 10, High-Strength Low Alloy

Irvin,Pa. C3	6.75
SparrowsPoint(39) B2	6.75

SHEETS, Galvannealed Steel

Canton,O. R2	4.95
Irvin,Pa. C3	4.95
Kokomo,Ind. C16	5.05
Niles, O. N12	5.20

SHEETS, ZINCGRIP Steel No. 10

Butler,Pa. A10	4.65
Middletown,O. A10	4.65

SHEETS, Electro Galvanized

Cleveland R2 (2S)	5.25
Niles,O. R2 (2S)	5.25
Weirton,W.Va. W6	5.10

SHEETS, Zinc Alloy

Ind.Harbor,Ind. I-2	5.05

SHEETS, Long Terne, Steel (Commercial Quality)

BeechBottom,W.Va. W10	4.80
Gary,Ind. C3	4.80
Mansfield,O. E6	4.80
Middletown,O. A10	4.80
Niles,O. N12	4.80
Weirton,W.Va. W6	4.80

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10	5.20

ROOFING SHORT TERNES (Package; 8 lb coated)

Gary,Ind. C3	$17.50
Yorkville,O. W10	17.50

MANUFACTURING TERNES (Special Coated)

Fairfield,Ala. T2	$6.45
Gary,Ind. C3	6.35
Irvin,Pa. C3	6.35
SparrowsPoint,Md. B2	6.45
Yorkville,O. W10	6.35

SHEETS, Lt. Coated Ternes, 6 lb

Yorkville,O. W10	$7.05

SHEETS, Mfg. Ternes, 8 lb

Gary,Ind. C3	$8.10
Warren,O. R2	8.10
Yorkville,O. W10	8.10

BLUED STOCK, 29 Ga.

Yorkville,O. W10	6.00

SHEETS, Culvert No. 16	**Cu Alloy**	**Cu Fe**
Ashland A10	5.20	...
Canton,O. R2	5.25	5.70
Fairfield,Ala. T2	5.20	5.45
Gary C3	5.20	5.45
IndianaHarbor I-2	5.20	5.45
Irvin,Pa. C3	5.20	5.45
Kokomo C16	5.40	...
MartinsFy,O. W10	5.20	5.45
Pittsburg,Cal. C11	5.95	...
SparrowsPt. B2	5.20	...
Torrance,Cal. C11	5.95	...

SHEETS, Culvert, No. 16 Corrugated Ingot Iron

Ashland,Ky. A10	5.45
Fairfield,Ala. T2	5.45

SHEETS, Hot-Rolled Ingot Iron 18 Gage and Heavier

Ashland(8) A10	3.60
Cleveland R2	3.95
Ind.Harbor,Ind. I-2	3.60
Warren,O. R2	3.95

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2	4.70
Middletown,O. A10	4.60
Warren,O. R2	4.70

SHEETS, Galvanized Ingot Iron No. 10 flat

Ashland,Ky.(8) A10	4.65
Canton,O. R2	5.15
Ind.Harbor,Ind. I-2	4.80

SHEETS, ZINCGRIP Ingot Iron

Butler,Pa. A10	4.90
Middletown,O. A10	4.90

SHEETS, Wrought Iron	**An'l**	**Galv.**
Apollo,Pa. B14	12.00	15.50

SHEETS, Drum Body

Pittsburg,Calif. C11	4.05
Torrance,Calif. C11	4.05

SHEETS, ALUMINIZED

Butler,Pa. A10	7.75

SHEETS, Well Casing

Fontana,Calif. K1	4.80

TIN PLATE, Electrolytic (Base Box)	**0.25 lb**	**0.50 lb**	**0.75 lb**
Aliquippa,Pa. J5	$6.35	$6.60	$6.85
Fairfield,Ala. T2	6.45	6.70	6.95
Gary,Ind. C3	6.35	6.60	6.85
GraniteCity,Ill. G4	6.55	6.80	7.05
Ind.Harbor,Ind. I-2, Y1	6.35	6.60	6.85
Irvin,Pa. C3	6.35	6.60	6.85
Niles,O. R2	6.35	6.60	6.85
Pittsburg,Calif. C11	7.10	7.35	7.60
SparrowsPoint,Md. B2	6.45	6.70	6.95
Weirton,W.Va. W6	6.35	6.60	6.85
Yorkville,O. W10	6.35	6.60	6.85

SHEETS, SILICON, H.R. or C.R.(22 Ga.) COILS (Cut Lengths ½c lower)	**Field**	**Armature**	**Electric**	**Motor**	**Dynamo**
BeechBottom W10 (cut lengths)	...	...	6.70	7.95	8.75
Brackenridge,Pa. A4	...	...	7.20	8.45	9.25
GraniteCity,Ill. G4(cut lengths)	...	...	6.90	8.15	...
Ind.Harbor,Ind. I-2	6.40	6.70	(34)	...	...
Mansfield,O. E6 (cut lengths)	5.90	6.20	6.70	7.95	8.75
Niles,O. N12 (cut lengths)	...	6.20	6.70	...	...
Vandergrift,Pa. C3	...	6.70	7.20	8.45	9.25
Warren,O. R2	6.40	6.70	7.20	8.45	9.25
Zanesville,O. A10	...	6.70	7.20	8.45	9.25

SHEETS, SILICON (22 Ga. Base) Coils (Cut Lengths ½c lower)

Transformer Grade	**72**	**65**	**58**	**52**
BeechBottom W10 (cut lengths)	9.30	9.85	10.55	11.35
Brackenridge,Pa. A4	9.80	10.35	11.05	....
Vandergrift,Pa. C3	9.80	10.35	11.05	11.85
Warren,O. R2	9.80	....	....	....
Zanesville,O. A10	9.80	10.35	11.05	11.85

H.R. or C.R. COILS AND CUT LENGTHS, SILICON (22 Ga.)	**T-100**	**T-90**	**T-80**	**T-73**
Butler,Pa. A10 (C.R.)	....	....	14.20	14.70
Vandergrift,Pa. C3	12.35	13.20	14.20	14.70

TIN PLATE, American COKE (Base Box)	**1.25 lb**	**1.50 lb**
Aliquippa J5	$7.30	$7.50
Fairfield,Ala. T2	7.40	7.60
Gary C3	7.30	7.50
Ind.Harbor I-2, Y1	7.30	7.50
Irvin,Pa. C3	7.30	7.50
Pitts.Cal. C11	8.05	8.25
Sp.Pt.,Md. B2	7.40	7.60
Warren R2	7.30	7.50
Weirton W6	7.30	7.50
Yorkville,O. W10	7.30	7.50

CANMAKING BLACK PLATE (Base Box)

Aliquippa,Pa. J5	$5.60
Fairfield,Ala. T2	5.70
Gary,Ind. C3	5.60
GraniteCity,Ill. G4	5.80
Ind.Harbor,Ind. I-2, Y1	5.60
Irvin,Pa. C3	5.60
Niles,O. R2	5.60
Pittsburg,Calif. C11	6.35
SparrowsPoint,Md. B2	5.70
Warren,O. R2	5.60
Weirton,W.Va. W6	5.60
Yorkville,O. W10	5.60

HOLLOWARE ENAMELING Black Plate (29 gage)

Aliquippa,Pa. J5	5.30
Follansbee,W.Va. F4	5.30
Gary,Ind. C3	5.30
GraniteCity,Ill. G4	5.50
Ind.Harbor,Ind. Y1	5.30
Irvin,Pa. C3	5.30
Niles,O. R2	5.30
SparrowsPoint,Md. B2	5.40
Warren,O. R2	5.30
Yorkville,O. W10	5.30

SHEETS, Enameling Iron

Ashland,Ky.(8) A10	4.40
Cleveland R2	4.40
Ecorse,Mich. G5	4.70
Gary,Ind. C3	4.40
GraniteCity,Ill. G4	4.60
Ind.Harbor,Ind. I-2	4.40
Irvin,Pa. C3	4.40
Middletown,O. A10	4.40
Youngstown Y1	4.40

STRIP, Hot-Rolled, High-Strength Low-Alloy

Atlanta(9) A11	5.10
Bessemer,Ala. T2	4.95
Conshohocken,Pa. A3	4.95
Ecorse,Mich. G5	5.15
Fairfield,Ala. T2	4.95
Fontana,Cal. K1	6.64
Gary,Ind. C3	4.95
Ind.Harb.,Ind. I-2, Y1	4.95
Lackawanna,N.Y. B2	4.95
LosAngeles(25) B3	5.70
Sharon,Pa. S3	4.95
So.SanFrancisco(25) B3	5.70
SparrowsPoint,Md. B2	4.95
Warren,O. R2	4.95
Weirton,W.Va. W6	4.95
Youngstown C3, Y1	4.95

STRIP, Hot-Rolled Alloy

Bridgeprt,Conn.(10) S15	5.10
Carnegie,Pa. S18	5.10
Fontana,Calif. K1	6.30
Gary,Ind. C3	5.10
Houston,Tex. S5	5.50
KansasCity,Mo. S5	5.70
NewBritn,Conn.(10) S15	5.10
Sharon,Pa. S3	5.10
Youngstown C3	5.10

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10	3.50
Warren,O. R2	3.85

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2	3.25
Alton,Ill.(1) L1	3.25
Ashland,Ky.(8) A10	3.25
Atlanta A11	3.40
Bessemer,Ala. T2	3.25
Bridgeprt,Conn.(10) S15	3.50
Buffalo(27) R2	3.25
Butler,Pa. A10	3.25
Carnegie,Pa. S18	3.50
Conshohocken,Pa. A3	3.50
Detroit M1	4.05
Ecorse,Mich. G5	3.45
Fairfield,Ala. T2	3.25
Fontana,Calif. K1	4.40
Gary,Ind. C3	3.25
Houston,Tex. S5	3.65
Ind.Harbor,Ind. I-2, Y1	3.25
KansasCity,Mo.(9) S5	3.85
Lackawanna,N.Y. B2	3.25
LosAngeles B3	4.00
Milton,Pa. B6	3.25
Minnequa,Colo. C10	4.30
NewBritain(10) S15	3.50
N.Tonawanda,N.Y. B11	3.25
Pittsburg,Calif. C11	4.40
Riverdale,Ill. A1	3.25
SanFrancisco S7	4.00
Seattle B3, N14	4.25
Sharon,Pa. S3	3.50
So.Chicago,Ill. W14	3.25
So.SanFrancisco B3	4.00
SparrowsPoint,Md. B2	3.25
Torrance,Calif. C11	4.00
Warren,O. R2	3.25
Weirton,W.Va. W6	3.25
WestLeechburg,Pa. A4	3.50
Youngstown C3, Y1	3.25

STRIP, Cold-Rolled Alloy Steel

Bridgeport,Conn.(10) S15	9.50
Carnegie,Pa. S18	9.50
Cleveland A7	9.50
Dover,O. G6	9.50
Fontana,Calif. K1	11.15
Harrison,N.J. C18	9.50
NewBritn.Conn.(10) S15	9.50
Pawtucket,R.I.(11) N8	9.50
Pawtucket,R.I.(12) N8	9.80
Sharon,Pa. S3	9.50
Worcester,Mass. A7	9.80
Youngstown C8	9.50

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2	4.75

STRIP, Cold-Finished, Spring Steel (Annealed)	**0.26-0.40C**	**0.41-0.60C**	**0.61-0.80C**	**0.81-1.05C**	**1.06-1.35C**
Bridgeport,Conn.(10) S15	4.15	5.95	6.55	8.50	10.80
Bristol,Conn. W1	...	...	6.85	8.80	....
Carnegie,Pa. S18	...	5.95	6.55	8.50	10.80
Cleveland A7	4.15	5.95	6.55	8.50	10.80
Dover,O. G6	4.15	5.95	6.55	8.50	10.80
FranklinPark,Ill. T6	4.50	6.10	6.70	8.65	....
Harrison,N.J. C18	...	...	6.85	8.80	11.10
Mattapan,Mass. T6	4.65	6.25	6.85	8.80	11.10
NewBritn.,Conn.(10) S15	4.15	5.95	6.55	8.50	10.80
NewCastle,Pa. B4	4.15	5.95	6.55	8.50	....
NewCastle,Pa. E5	4.50	5.95	6.55	8.50	10.80
NewYork W3	...	6.30	6.90	8.85	11.15
Pawtucket,R.I. N8:					
Cleve-or-Pitts.Base	4.70	5.95	6.55	8.50	10.80
Worcester,Base	4.65	6.25	6.85	8.80	11.10
Sharon,Pa. S3	4.50	5.95	6.55	8.50	10.80
Trenton,N.J. R5	...	6.25	6.85	8.80	11.10
Wallingford,Conn. W2	4.65	6.25	6.85	8.80	11.10
Weirton,W.Va. W6	4.15	5.95	6.55	8.50	10.80
Worcester,Mass. A7	4.45	6.25	6.85	8.80	11.10
Worcester,Mass. T6	4.65	6.25	6.85	8.80	11.10
Youngstown C8	4.15	5.95	6.55	8.50	10.80
Spring Steel (Tempered)					
Trenton,N.J. R5	...	...	9.30	11.25	13.85
Harrison,N.J. C18	...	...	9.30	11.25	13.85

STRIP, Cold-Rolled Carbon

Anderson,Ind.(40) G6	4.40
Berea,O. C7	6.00
Bridgeprt,Conn.(10) S15	4.40
Butler,Pa. A10	4.15
Cleveland A7, J5	4.15
Dearborn,Mich. D3	4.75
Detroit D2	4.55
Detroit M1	4.55
Dover,O.(40) G6	4.50
Ecorse,Mich. G5	4.55
Follansbee,W.Va. F4	4.50
Fontana,Calif. K1	5.75
FranklinPark,Ill. T6	4.50
Ind.Harbor,Ind. I-2	4.40
Lackawanna,N.Y. B2	4.15
LosAngeles C1	5.85
Mattapan,Mass. T6	5.00
Middletown, O. A10	4.15
New Britain(10) S15	4.50
NewCastle,Pa. B4	4.50
NewCastle,Pa.(40) E5	4.50
NewHaven,Conn. D2	5.00
NewHaven,Conn. A7	4.65
NewYork W3	5.00
Pawtucket,R.I. R3	5.15
Pawtucket,R.I.(21) N8	5.00
Riverdale,Ill. A1	4.50
Rome,N.Y. R6	4.15
Sharon,Pa. S3	4.50
SparrowsPoint,Md. B2	4.15
Trenton,N.J.(13) R5	5.00
Wallingford,Conn. W2	5.00
Warren,O.(40) T5	4.50
Warren,O. R2	4.50
Weirton,W.Va. W6	4.15
Youngstown C8, (40)	4.50
Youngstown Y1	4.15

STRIP, Cold-Rolled, High-Strength Low-Alloy

Cleveland A7, J5	6.20
Dover,O. G6	6.20
Ecorse,Mich. G5	6.40
Fontana,Calif. K1	6.95
Lackawanna,N.Y. B2	6.40
Sharon,Pa. S3	6.20
SparrowsPoint,Md. B2	6.40
Warren,O. R2	6.20
Weirton,W.Va. W6	6.20
Youngstown Y1	6.20

STRIP, Electro Galvanized

Weirton,W.Va. W6	4.15
Youngstown C8	4.15

Key to Producing Companies

A1 Acme Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A7 American Steel & Wire
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.
A13 American Cladmetals Co.
B1 Babcock & Wilcox Tube
B2 Bethlehem Steel Co.
B3 Beth. Pac.Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B6 Boiardi Steel Corp.
B8 Braeburn Alloy Steel
B11 Buffalo Bolt Co.
B14 A. M. Byers Co.
C1 Calif. Cold Rolled Steel
C2 Calumet Steel Div., Borg-Warner Corp.
C3 Carnegie-Illinois Steel
C4 Carpenter Steel Co.
C5 Central Iron & Steel Div. Barium Steel Corp.
C7 Cleve.Cold.Roll.MillsCo.
C8 Cold Metal Products Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia Steel Co.
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
D2 Detroit Steel Corp.
D3 Detroit Tube & Steel
D4 Disston & Son, Henry
D6 Driver Harris Co.
D7 Dickson Weatherproof Nail Co.
E1 Eastern Gas&Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire Steel Corp.
F2 Firth Sterling Steel
F3 Fitzsimons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
G1 Geneva Steel Co.
G2 Globe Iron Co.
G3 Globe Steel Tubes Co.
G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.
H1 Hanna Furnace Corp.
H4 Heppenstall Co.
I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.
K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K5 Kidd Drawn Steel Co.
L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Electric Steel
L5 Lockhart Iron & Steel
L6 Lone Star Steel Co.
L7 Lukens Steel Co.

TIGHT COOPERAGE HOOP

Atlanta A11	3.40
Riverdale,Ill. A1	3.40
Sharon,Pa. S3	3.65
Youngstown C3	3.40

WIRE, MB Spring, High Carbon

Aliquippa,Pa. J5	5.90
Alton,Ill.(1) L1	5.90
Bartonville,Ill.(1) K4	5.90
Buffalo W12	5.90
Cleveland A7	5.90
Donora,Pa. A7	5.90
Duluth A7	5.90
Fostoria,O. S1	5.90
Johnstown,Pa. B2	5.90
LosAngeles B3	6.85
Milbury,Mass.(12) N6	6.20
Monessen,Pa. P7, P16	5.90
Palmer,Mass. W12	6.20
Pittsburg,Calif. C11	6.85
Portsmouth,O. P12	5.90
Roebling,N.J. R5	6.20
So.Chicago,Ill. R2	5.90
SparrowsPoint,Md. B2	6.00
Struthers,O. Y1	5.90
Trenton,N.J. A7	6.20
Waukegan,Ill. A7	5.90
Williamsport,Pa. B2	6.00
Worcester A7,J4,T6,W12	6.20
Worcester,Mass. N6	6.20

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	5.35
Buffalo W12	5.35
Cleveland A7	5.35
Crawfordsville,Ind. MS	5.35
Dover,O. G6	5.35
Fostoria,O. S1	5.50
Kokomo,Ind. C16	5.35
FranklinPark,Ill. T6	5.70
Massillon,O. R8	5.35
Monessen,Pa. P7, P16	5.35
Pawtucket,R.I.(12) NS	6.00
Trenton,N.J. R5	5.65
Worcester A7, T6, W12	5.65

WIRE, Fine and Weaving (8-in. Coils)

Bartonville,Ill.(1) K4	8.45
Buffalo W12	8.45
Chicago W13	8.45
Cleveland A7	8.45
Crawfordsville,Ind. MS	8.45
Fostoria,O. S1	8.45
Johnstown,Pa. B2	8.45
Kokomo,Ind. C16	8.45
Monessen,Pa. P16	8.45
Palmer,Mass. W12	8.75
Portsmouth,O. P12	8.45
Roebling,N.J. R5	8.75
Woukegan,Ill. A7	8.45
Worcester,Mass. A7,T6	8.75

WIRE, Tire Bead

Bartonville,Ill.(1) K4	10.55
Monessen,Pa. P16	10.80
Roebling,N.J. R5	10.80

WIRE, Manufacturers Bright, Low-Carbon

AlabamaCity,Ala. R2	4.50
Aliquippa,Pa. J5	4.50
Atlanta A11	4.60
Alton,Ill.(1) L1	4.50
Bartonville,Ill.(1) K4	4.50
Buffalo W12	4.50
Chicago W13	4.50
Cleveland A7, C20, R2	4.50
Crawfordsville,Ind. MS	4.60
Donora,Pa. A7	4.50
Duluth A7	4.50
Fairfield,Ala. T2	4.50
Fostoria,O.(24) S1	4.85
Houston S5	4.90
Johnstown,Pa. B2	4.50
Joliet,Ill. A7	4.50
KansasCity,Mo. S5	5.10
Kokomo,Ind. C16	4.60
LosAngeles B3	5.45
Minnequa,Colo. C10	4.75
Monessen,Pa. P7	4.50
Newark, 6-8ga. I-1	5.15
No. Tonawanda B11	4.50
Palmer, Mass. W12	4.80
Pittsburg,Calif. C11	5.45
Portsmouth,O. P12	4.50
Rankin,Pa. A7	4.50
So.Chicago,Ill. R2	4.50
So.SanFrancisco C10	5.45
SparrowsPoint,Md. B2	4.60
Sterling,Ill.(1) N15	4.50
Struthers,O. Y1	4.50
Torrance,Calif. C11	5.45
Waukegan,Ill. A7	4.50
Worcester,Mass. A7	4.80
Worcester,Mass. T6	4.95

WIRE, Upholstery Spring

Aliquippa,Pa. J5	5.55
Alton,Ill.(1) L1	5.55
Buffalo W12	5.55
Cleveland A7	5.55
Donora,Pa. A7	5.55
Duluth A7	5.55
Johnstown,Pa. B2	5.55
LosAngeles B3	6.50
Monessen,Pa. P7, P16	5.55
NewHaven,Conn. A7	5.85
Palmer,Mass. W12	5.85
Pittsburg,Calif. C11	6.50
Portsmouth,O. P12	5.55
Roebling,N.J. R5	5.85
So.Chicago,Ill. R2	5.55
SparrowsPoint,Md. B2	5.65
Struthers,O. Y1	5.55
Torrance,Calif. C11	6.50
Trenton,N.J. A7	5.85
Waukegan,Ill. A7	5.55
Worcester,Mass. A7	5.85

WIRE, Galv'd ACSR for Cores

Bartonville,Ill. K4	8.15
Monessen,Pa. P16	8.15
Roebling,N.J. R5	8.45
SparrowsPoint,Md. B2	8.25

ROPE WIRE	Mild Plow	Plow	Imp. Plow
Bartonville,Ill. K4	8.05	8.05	8.30
Buffalo W12	8.05	8.05	8.30
Cleveland A7	8.05	8.05	8.30
Donora,Pa. A7	8.05	8.05	8.30
Fostoria,O. S1	8.05	8.05	8.30
Johnstown,Pa. B2	8.05	8.05	8.30
Monessen,Pa. P7, P16	8.05	8.05	8.30
NewHaven,Conn. A7	8.35	8.35	8.60
Palmer,Mass. W12	8.35	8.35	8.60
Portsmouth,O. P12	8.05	8.05	8.30
Roebling,N.J. R5	8.35	8.35	8.60
SparrowsPoint,Md. B2	8.15	8.15	8.40
Struthers,O. Y1	8.05	8.05	8.30
Trenton,N.J. A7	8.35	8.35	8.60
Waukegan,Ill. A7	8.05	8.05	8.30
Williamsport,Pa. B2	8.15	8.15	8.40
Worcester,Mass. J4, T6	8.35	8.35	8.60

WIRE, Merchant Quality

(6 to 8 gage)	An'ld	Galv.
AlabamaCity R2	5.35	5.60
Aliquippa J5	5.35	5.60
Atlanta A11	5.45	5.70
Bartonville(19) K4	5.35	5.60
Buffalo(31) W12	4.50	...
Cleveland A7	5.35	5.60
Crawfordsvil. MS	5.45	5.70
Donora A7	5.35	5.60
Duluth A7	5.35	5.60
Fairfield T2	5.35	5.60
Houston,Tex. S5	5.75	6.00
Johnstown B2	5.35	5.60
Joliet,Ill. A7	5.35	5.60
KansasCy.Mo. S5	5.95	6.20
Kokomo C16	5.45	5.70
LosAngeles B3	6.30	...
Minnequa C10	5.60	5.85
Monessen P7	5.35	5.60
Palmer(31) W12	4.80	...
Pitts.,Cal. C11	6.30	6.55
Prtsmth.(18) P12	5.35	5.60
Rankin A7	5.35	5.60
So.Chicago R2	5.35	5.60
So.S.Fran. C10	6.30	6.55
SparrowsPt. B2	5.45	5.70
Sterling,Ill.(1)N15	5.35	5.60
Struthers,O. Y1	5.35	5.60
Torrance,Cal. C11	6.30	...
Worcester A7	5.65	5.90

WIRE (16 gage)

	Stone	Stone
Aliquippa J5	9.80	11.30
Bartonville(1) K4	9.80	11.30
Cleveland A7	9.80	11.30
Crawfrdvil. MS	9.80	11.30
Fostoria,O. S1	9.90	11.40
Johnstown B2	9.80	11.30
Kokomo C16	9.80	11.30
Minnequa C10	10.05	11.80
Palmer,Mass. W12	9.80	11.30
Pitts.,Cal. C11	10.15	11.65
Prtsmth.(18) P12	9.80	11.30
SparrowsPt. B2	9.90	11.40
Waukegan A7	9.80	11.30

WIRE, Barbed

	Col.
AlabamaCity,Ala. R2	126
Aliquippa,Pa. J5	126
Atlanta A11	128
Bartonville,Ill. K4	126
Crawfordsville MS	128
Donora,Pa. A7	126
Duluth,Minn. A7	126
Fairfield,Ala. T2	126
Houston,Tex. S5	134
Johnstown,Pa. B2	126
Joliet,Ill. A7	126
KansasCity,Mo. S5	138
Kokomo,Ind. C16	128
Minnequa,Colo. C10	131
Monessen,Pa. P7	126
Pittsburg,Calif. C11	146
Portsmouth,O.(18) P12	126
Rankin,Pa. A7	126
So.Chicago,Ill. R2	126
So.SanFran.,Calif. C10	146
SparrowsPoint,Md. B2	128
Sterling,Ill.(1) N15	126

FENCE POSTS

	Col.
ChicagoHts., Ill. C2	116
Duluth A7	116
Franklin,Pa. F5	116
Huntington,W.Va. W7	116
Johnstown,Pa. B2	116
Huntington,W.Va. W7	116
Joliet,Ill. A7	116
Marion,O. P11	116
Minnequa,Colo. C10	121
Moline,Il. R2	112
So.Chicago R2	116
Williamsport,Pa. S19	130

WOVEN FENCE, 9-15½ Ga. Col.

AlabamaCity,Ala. R2	116
Ala.City,Ala. 17-18ga.R2	198
Aliquippa,Pa. 9-14½ga.J5	116
Atlanta A11	118
Bartonville,Ill.(19) K4	116
Crawfordsville,Ind. MS	118
Donora,Pa. A7	116
Duluth A7	116
Houston,Tex. S5	124
Fairfield,Ala. T2	116
Johnstown,Pa. B2	116
Johnstn,17ga.6" B2	190
Johnstn,17ga.,4" B2	193
Joliet,Ill. A7	116
KansasCity,Mo. S5	128
Kokomo,Ind. C16	118
Minnequa,Colo. C10	121
Monessen,Pa. P7	116
Pittsburg,Calif. C11	139
Portsmouth,O.(18) P12	116
Rankin,Pa. A7	116
So.Chicago,Ill. R2	116
Sterling,Ill.(1) N15	116

BALE TIES, Single Loop

	Col.
AlabamaCity,Ala. R2	113
Atlanta A11	114
Bartonville,Ill.(19) K4	113
Chicago W13	113
Crawfordsville MS	115
Donora,Pa. A7	113
Duluth A7	113
Fairfield,Ala. T2	113
Joliet,Ill. A7	113
KansasCity,Mo. S5	125
Kokomo,Ind. C16	115
Minnequa,Colo. C10	118
Pittsburg,Calif. C11	137
So.Chicago,Ill. R2	113
So.SanFran.,Calif. C10	137
SparrowsPoint,Md. B2	115
Sterling,Ill.(1) N15	113

AXLES

Ind.Hardor,Ind. S13	5.25
Johnstown,Pa. B2	5.25

JOINT BARS

Bessemer,Pa. C3	4.40
Fairfield,Ala. T2	4.40
Ind.Harbor,Ind. I-2	4.40
Joliet,Ill. C3	4.40
Lackawanna,N.Y. B2	4.40
Minnequa,Colo. C10	4.40
Steelton,Pa. B2	4.40

STANDARD TRACK SPIKES

Ind.Harbor,Ind. I-2, Y1	5.60
KansasCity,Mo. S5	5.85
Lebanon,Pa. B2	5.60
Minnequa,Colo. C10	5.60
Pittsburgh J5	5.60
Seattle B3	6.10
So.Chicago,Ill. R2	5.60
Struthers,O. Y1	5.60
Youngstown R2	5.60

NAILS & STAPLES, Stock To dealers & Mfrs. (7)

	Col.
AlabamaCity,Ala. R2	106
Aliquippa,Pa. J5	106
Atlanta A11	108
Bartonville,Ill.(19) K4	106
Chicago,Ill. W13	106
Cleveland A9	111
Crawfordsville,Ind. MS	108
Donora,Pa. A7	106
Duluth A7	106
Fairfield,Ala. T2	106
Galveston,Tex. D7	114
Houston,Tex. S5	114
Johnstown,Pa. B2	106
Joliet,Ill. A7	106
KansasCity,Mo. S5	118
Kokomo,Ind. C16	108
Minnequa,Colo. C10	111
Monessen,Pa. P7	106
Pittsburg,Calif. C11	125
Portsmouth,O. P12	106
Rankin,Pa. A7	106
So.Chicago,Ill. R2	106
SparrowsPoint,Md. B2	108
Sterling,Ill.(1) N15	106
Torrance,Calif. C11	126
Worcester,Mass. A7	112

NAILS & STAPLES, Non-Stock

AlabamaCity,Ala. R2	5.35
Bartonville,Ill.(19) K4	5.35
Crawfordsville,Ind. MS	5.45
Donora,Pa. A7	5.35
Duluth A7	5.35
Johnstown,Pa. B2	5.35
Joliet,Ill. A7	5.35
Kokomo,Ind. C16	5.45
Minnequa,Colo. C10	5.60
Pittsburg,Calif. C11	6.30
Portsmouth,O. P12	5.35
Rankin,Pa. A7	5.35
So.Chicago,Ill. R2	5.35
SparrowsPoint,Md. B2	5.45
Worcester,Mass. A7	5.65

NAILS, Cut (100 lb keg) To dealers (33)

Conshohocken,Pa. A3	$6.75
Wheeling,W.Va. W10	6.75

TIE PLATES

Fairfield,Ala. T2	4.20
Gary,Ind. C3	4.20
Ind.Harbor,Ind. I-2	4.20
Lackawanna,N.Y. B2	4.20
Minnequa,Colo. C10	4.20
Pittsburg,Calif. C11	4.35
Seattle B3	4.35
Steelton,Pa. B2	4.20
Torrance,Calif. C11	4.35
Weirton,W.Va. W6	4.20

TRACK BOLTS (20) Treated

KansasCity,Mo. S5	9.10
Lebanon,Pa.(32) B2	8.85
Minnequa,Colo. C10	9.10
Pittsburgh O3, P14	9.10
Seattle B3	9.35

RAILS	Std. No. 1	Std. No. 2	Std. All No. 2	TeeRails 60 lb Under
Bessemer,Pa. C3	3.40	3.30	3.35	3.75
Ensley,Ala. T2	3.40	3.30	...	3.75
Fairfield,Ala. T2	...	...	...	3.75
Gary,Ind. C3	3.40	3.30	3.35	...
Huntington,W.Va. W7	...	...	...	3.75
Ind.Harbor,Ind. I-2	3.40	3.30	3.35	...
Johnstown,Pa. B2	...	...	...(16)	3.75
Lackawanna B2	3.40	3.30	...	3.75
Minnequa,Colo. C10	3.40	3.30	...	4.25
Steelton,Pa. B2	3.40	3.30	...	...
Williamsport,Pa. S19	...	...	...	4.00

Key to Producing Companies

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M5 Medart Co.
M6 Mercer Tube & Mfg. Co.
M8 Mid-States Steel & Wire
M9 Midvale Co.
M10 Missouri-Illinois Furnace
M12 Moltrup Steel Products
M13 Monarch Steel Co.
M14 McInnes Steel Co.

N2 National Supply Co.
N3 National Tube Co.
N5 Nelson Steel & Wire Co.
N6 New Eng.HighCarb.Wire
N8 Newman-Crosby Steel
N12 Niles Rolling Mill Co.
N14 Nrthwst. Steel Roll.Mills
N15 Northwestern S.&W. Co.
N16 New Delphos Mfg. Co.

O3 Oliver Iron & Steel Corp.
O4 Oregon Steel Mills

P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke&Chem.
P7 Pittsburgh Steel Co.
P9 Pittsburgh Tube Co.
P11 Pollak Steel Co.
P12 Portsmouth Division, Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., Amer. Chain & Cable
P17 Plymouth Steel Co.
R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R7 Rotary Electric Steel Co.
R8 RelianceDiv.,EatonMfg.
S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S5 Sheffield Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S9 Sloss-Sheffield S.&I. Co.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S16 Struthers Iron & Steel
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.
S20 Southern States Steel
T2 Tenn. Coal, Iron & R.R.
T3 Tenn. Prod. & Chem.
T4 Texas Steel Co.
T5 Thomas Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div. Am. Rad. & Stan. San.
U1 Ulster Iron Works
U4 Universal Cyclops Steel
V2 Vanadium Alloys Steel
V3 Vulcan Crucible Steel Co.
W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W7 W. Va. Steel & Mfg. Co.
W8 West.Auto.Mach.Screw
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W16 Worth Steel Co.
W18 Wyckoff Steel Co.
Y1 Youngstown Sheet&Tube

TOOL STEEL

Grade	Cents per lb	Grade	Cents per lb
Reg. Carbon	21.00	18W,4Cr,3V	126.00
Extra Carbon	24.50	18W,4Cr,2V,9Co	185.50
Spec. Carbon	29.50-31.50	18W,4Cr,2V,6Co	169.50
Oil Hardening	32.00	18.25W,4.25Cr,1V,4.75Co	156.50
Cr Hot Wrk.	32.00	20.25W,4.25Cr,1.6V,12.25Co	293.50
Hi-Carbon-Cr	57.50	1.5W,4Cr,1V,8.5Mo	71.50
18W,4Cr,1V	100.00	6.4W,4.5Cr,1.9V,5Mo	76.50
18W,4Cr,2V	113.00	6W,4Cr,3V,6Mo	97.00

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, D4, F2, H4, J3, L3, M14, S8, T7, U4, V2, V3

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant. (4) Reinforcing.
(5) Philadelphia del.
(6) Chicago or Birm. base.
(7) To jobbers, 3 cols. lower.
(8) 16 gage and heavier.
(9) 6 in. and narrower.
(10) Pittsburgh base.
(11) Cleveland & Pittsburgh base.
(12) Worcester, Mass. base.
(13) 3" & wider; over ½" to under 3" 5.50c.
(14) Also wide flange beams.
(15) ½" and thinner.
(16) 40 lb and under.
(17) Flats only.
(18) To dealers.
(19) Chicago & Pittsburgh base.
(20) Deduct 0.25c for untreated.
(21) New Haven, Conn. base.
(22) Del. San Fran. Bay area.
(24) Deduct 0.35c for finer than 15 Ga.
(25) Bar mill bands.
(26) Reinforcing, to fabricators (⅝" bar, elec. furn, billet, 5.03c); to consumers, 5.08c.
(27) Bar mill sizes.
(28) Bonderized.
(31) Not annealed.
(32) Untreated.
(33) To jobbers, deduct 20 cents.
(34) 6.70c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) 15 Ga. & lighter; 60" & narrower.
(38) 14 Ga. & lighter; 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 4.75c, 0.035" and heavier.

STANDARD PIPE, T. & C.

BUTTWELD Size Inches	List Per Ft	Pounds Per Ft	Carload Discounts from List, % Black A	Black B	Black C	Galvanized D	Galvanized E	Galvanized F
⅛	5.5c	0.24	36.5	34.5	33.5	5.5	3.5	5.5
¼	6.0	0.42	33.5	31.5	30.5	5.5	3.5	6.5
⅜	6.0	0.57	29.0	27.0	26.0	0.5	+1.5	2.5
½	8.5	0.85	40.5	38.5	39.5	21.0	19.0	20.0
¾	11.5	1.13	43.5	41.5	42.5	25.0	23.0	24.0
1	17.0	1.68	46.0	44.0	45.0	28.0	26.0	27.0
1¼	23.0	2.28	46.5	44.5	45.5	28.5	26.5	27.5
1½	27.5	2.73	47.0	45.0	46.0	29.0	27.0	28.0
2	37.0	3.68	47.5	45.5	46.5	29.5	27.5	28.5
2½	58.5	5.82	48.0	46.0	47.0	30.0	28.0	29.0
3	76.5	7.62	48.0	46.0	47.0	30.0	28.0	29.0

Column A: Etna, Pa. N2; Monaca, Pa. P9; Sharon, Pa. M6; Butler, Pa. ⅛-⅜", F6; Benwood, W. Va., 1½ percentage points lower on ⅛", 2 points lower on ¼", 3 points lower on ⅜", W10. Wheatland, Pa., 2 points lower on ⅛" through ⅜", W9. Following make ½" and larger: Lorain, O. N3; Youngstown, plus 43% on 3½" and 4", R2; Youngstown Y1; Aliquippa, Pa. J5. Fontana, Calif. K1 quotes 11 points lower on ½" and larger continuous weld and 31% on 3½" and 4".

Columns B & E: Sparrows Point, Md. B2.

Columns C & F: Indiana Harbor, Ind., ½" through 3", Y-1; Alton, Ill. (Lorain, O., base) L1.

Column D: Etna, Pa. N2; Monaca, Pa. quotes 1 pt lower on ½" through 3", P9; Sharon, Pa. M6, quotes 1 pt lower on ⅛", 1 pt higher on ⅜" and 1 pt lower on ½" through 3"; Butler, Pa., ⅛" through ⅜", F6; Benwood, W. Va., W10 except 3½ pts lower on ⅛", 2½ pts lower on ¼", 3 pts lower on ⅜" Wheatland, Pa., except 2 pts lower on ⅛", ¼" and ⅜"; W9. Following make ½" and larger: Lorain, N3; Youngstown, plus 24.5% on 3½" and 4", R2; Youngstown, Y1; Aliquippa, Pa. J5. Fontana, Calif. K1 quotes 8 pts lower on ½" and larger continuous weld and 15.5% on 3½" and 4".

SEAMLESS AND ELECTRIC WELD Size Inches	List Per Ft	Pounds Per Ft	Carload Discounts from List, % Seamless Black A	Seamless Galv. B	Elec. Weld Black C	Elec. Weld Galv. D
2	37.0c	3.68	36.0	17.5	36.0	17.5
2½	58.5	5.82	39.0	20.5	39.0	20.5
3	76.5	7.62	39.0	20.5	39.0	20.5
3½	92.0	9.20	41.0	22.5	41.0	22.5
4	$1.09	10.89	41.0	22.5	41.0	22.5
5	1.48	14.81	41.0	22.5	41.0	22.5
6	1.92	19.18	41.0	22.5	41.0	22.5

Column A: Aliquippa J5; Ambridge N2; Lorain N3; Youngstown Y1.

Column B: Aliquippa J5; Lorain, N3; Youngstown, Y1.

Columns C & D: Youngstown R2.

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft inclusive.

O.D. In.	B.W. Ga.	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.	Elec. Weld C.D.
1	13	12.36	14.39	13.96	13.96
1¼	13	14.63	17.05	14.19	16.54
1½	13	16.17	19.02	15.68	18.45
1¾	13	18.39	21.64	17.84	20.99
2	13	20.61	24.24	19.99	23.51
2¼	13	22.96	27.03	22.27	26.22
2¼	12	25.29	29.76	24.53	28.87
2½	12	27.71	32.58	26.88	31.60
2¾	12	29.36	34.53	28.48	33.49
3	12	30.82	36.27	29.90	35.18
3¼	11	35.87	42.22	34.79	40.95
3½	11	38.52	45.35	37.36	43.99
4	10	47.82	56.25	46.39	54.56
4½	9	63.37	74.59	61.47	72.35
5	9	73.37	86.32	71.17	83.73
6	7	112.62	132.51	....	....

Boiler tube producers include Babcock & Wilcox Tube Co., National Tube Co., Globe Steel Tubes Co., Pittsburgh Steel Co., Republic Steel Corp., Standard Tube Co.

CLAD STEELS

(Cents per pound)

Cladding	Plates Carbon Base 10%	Plates Carbon Base 20%	Strip Cold-Rolled Carbon Base 10% Both Sides	Sheets Carbon Base 10%	Sheets Carbon Base 20%	Sheets Copper Base Both Sides
Stainless 302	....	....	....	19.75	21.50–24.00	75.00
304	23.50	26.50–28.00	....	20.75–23.50	22.50–25.5	77.00
305	....	....	....	....	....	79.00
309	29.00	33.50	....	....	....	....
310	35.00	39.50	....	....	....	105.00
316	28.00	31.00–32.50	....	26.00	28.00–34.5	....
317	33.00	37.50	....	....	....	....
318	32.00	36.50	....	....	....	....
321	25.00	29.50	....	23.00	25.00	90.00
347	26.00	29.00–30.50	....	24.00	26.00–31.5	94.00
405	19.75	26.25	....	....	....	....
410	19.25	25.75	....	....	....	....
430	19.25	25.75	....	....	....	....
Nickel	31.00	41.00	31.50	41.00	....	88.00
Inconel	39.00	51.00	....	....	....	140.00
Monel	32.00	42.00	26.50	33.50	....	83.00
Copper*	....	....	23.45†	29.65‡	....	....

* Deoxidized. † 18.95c for hot-rolled. ‡ 25.90c for hot-rolled. Production points for carbon base products: Stainless plates, sheets, Conshohocken, Pa. A3 and New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. W16, Coatesville, Pa. L7 and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; nickel monel, copper-clad strip, Carnegie, Pa., S18. Production point for copper-base sheets is Carnegie, Pa. A13.

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS

(F.o.b. midwestern plants; per cent off list for less than case lots to consumers)

6 in. and shorter:	
½-in. & smaller diam..	27
⅝-in. & ⅞-in.	29
1-in. and larger	26
Longer than 6 in.:	
All diams.	22
Lag bolts, all diams.:	
6 in. and shorter	30
over 6 in. long	28
Ribbed Necked Carriage.	26
Blank	40
Plow	40
Step, Elevator, Tap, and Sleigh Shoe	28
Tire bolts	20
Boiler & Fitting-Up bolts	37

NUTS

H.P. & C.P. Reg. & Heavy Square:

½-in. and smaller	25
⅝-in. & ⅞-in.	23
1-in.-1½-in.	23
1⅝ in. and larger	16

H.P. Hex.:	Reg.	Heavy
½-in. & smaller	33	29
⅝-in. & ⅞-in..	28	25
1-in.-1½-in. ..	25	23
1⅝ in. & larger	17	16
C.P. Hex:		
½-in. & smaller	33	29
⅝-in. & ⅞-in..	30	27
1-in. & 1½ in.	27	24
1⅝ in. & larger	20	17

SEMIFINISHED NUTS

American Standard

(Per cent off list for less than case or keg quantities)

	Hvy.	Reg.	Lght.
½-in. and smaller	35	41	41
⅝-in. & ⅞-in.	30	36	36
1-in.-1½-in. .	27	31	33
1⅝-in.&larger	17	21	..

STEEL STOVE BOLTS

(F.o.b. plant; per cent off list in packages)

Plain finish ..... 63.5 & 10
Plated finishes ... 50 & 10

HEXAGON CAP SCREWS

(1020 steel; packaged; per cent off list)

6 in. or shorter:	
¼-in. through ⅝-in. ..	50
¾-in. through 1 in. ...	43
Longer than 6 in.:	
¼-in. through ⅝-in. ..	33
¾-in. through 1 in. ..	13

SQUARE HEAD SET SCREWS

(Packaged; per cent off list)

1 in. diam. x 6 in. and shorter	46
1 in. and smaller diam. x over 6 in.	33

HEADLESS SET SCREWS

(Packaged; per cent off list)

No. 10 and smaller	41
¼-in. diam. & larger	24
N.F. thread, all diams. .	18

RIVETS

F.o.b. midwestern plants
Structural ½-in., larger 7.25c
7/16-in., under .....43 off

WASHERS, WROUGHT

F.o.b. shipping point, to jobbers .....List to 50c off

ELECTRODES

(Threaded, with nipples, unboxed, f.o.b. plant)

GRAPHITE

Inches Diam.	Length	Cents per lb
17,18,20	60,72	16.00
8 to 16	48,60,72	16.50
7	48,60	17.75
6	48,60	19.00
4, 5½	40	19.50
3	40	20.50
2½	24,30	21.00
2	24,30	23.00

CARBON

40	100,110	7.50
35	100,110	7.50
30	84,110	7.50
24	72 to 104	7.50
17 to 20	34,90	7.50
14	60,72	8.00
10,12	60	8.25

STAINLESS STEEL

(Cents per pound)

Type	Sheets	C.R. Strip	Bars Wire Structurals
301...	39.00	32.00	30.00
302...	39.00	34.50	30.00
303...	41.00	38.00	32.50
304...	41.00	36.50	31.50
309...	53.50	52.50	43.00
316...	54.50	56.50	47.50
321...	47.00	46.00	35.50
347...	51.50	50.00	40.00
410...	34.50	28.50	24.50
416...	35.00	35.00	25.00
420...	42.00	45.00	30.00
430...	37.00	29.00	25.00
501...	25.50	24.00	13.00
502...	26.50	25.00	14.00

Baltimore, Types 301 through 347 sheet, except 309 E2.

Baltimore, bars, wire and structurals A10.

Brackenridge, Pa., sheets A4.

Bridgeville, Pa., bars, wire, sheets & strip U4.

Butler, Pa., sheets and strip except Types 303, 309, 416, 420, 501 & 502 A10.

Carnegie, Pa., strip except Type 416, S18.

Cleveland, strip A7.

Detroit, strip, except Types 303, 309, 321, 416, 420, 501 and 502 M1.

Dunkirk, N.Y., bars, wire A4.

Duquesne, Pa., bars C3.

Fort Wayne, Ind., bars and wire, except Types 501 and 502 J6.

Gary, Ind., sheets except Type 416 C3.

Harrison, N. J., strip C18.

Harrison, N. J., Types 302, 304, 316 wire and strip D6.

Massillon, all products R2.

McKeesport, Pa., bars; sheets except Type 416 C3.

McKeesport, Pa., bars & wire except Types 301, 309, 501 & 502; strip Types 410 & 430 only F2.

Middletown, O., sheets except Types 303, 416, 420, 501 and 502 A10.

Midland, sheets & strip C18.

Munhall, Pa., bars C3.

Pittsburgh, sheets C18.

Reading, Pa., bars & strip C4.

So. Chicago, Ill., bars & structurals C3.

Syracuse, N. Y., bars, wire & structurals C18.

Titusville, Pa., bars, U4.

Wallingford, Conn., strip, except 309, W2 quotes 0.25 cents higher.

Washington, Pa., bars, sheets & strip J3.

Washington, Pa., Types 301 through 347 sheets & strip as listed except 303 & 309; 316 sheets 59.50c, strip 61.50c W4.

Watervliet, N. Y., structurals & bars A4.

Waukegan, bars & wire A7.

West Leechburg, Pa., strip, A4.

Youngstown, strip C8.

COAL, CHEMICALS

Spot, cents per gallon, ovens
Pure benzol 25.00-30.00
Toluol, one deg...21.00-28.00
Industrial xylol ..21.00-29.50

Per ton bulk, ovens
Sulphate of ammonia..$32-45

Cents per pound, ovens
Phenol, 40 (carlots, non-returnable drums) ..17.25
Do., less than carlots..18.00
Do., tank cars 15.50

FLUORSPAR

Metallurgical grade, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content, 70% or more, $39; less than 60%, $36. Imported, net ton, duty paid, metallurgical grade, $28-$29.

METAL POWDERS

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted.)

	Cents
Sponge Iron:	
98+% Fe, carlots..	15.00
Swedish, c.i.f. New York, in bags ...7.40-8.50	
Electrolytic Iron:	
Annealed, 99.5% Fe	39.50
Unannealed, 99+% Fe	33.50
Unannealed 99+% Fe(minus 325 mesh)	48.50
Powder Flakes 44.50	
Carbonyl Iron:	
97.9-99.8%, size 5 to 10 microns..70.00-135.00	
Aluminum:	
Carlots, freight allowed	27.00
Atomized, 500 lb drums, freight allowed	30.00
Brass, 10-ton lots.28.50-31.25	
Copper:	
Electrolytic	33.75
Reduced	33.50
Lead	20.50
Manganese:	
Minus 100-mesh	52.00
Minus 35 mesh	48.00
Minus 200 mesh	56.00
Nickel unannealed ...	75.50
Nickel-Silver, 10-ton lots	41.75
Silicon	34.00
Solder (plus cost of metal)	8.50
Stainless Steel, 302 ..	75.00
Tin	$1.20
Zinc, 10-ton lots.20.50-28.00	
Tungsten:	Dollars
99%, minus 80 to 200 mesh, freight allowed:	
over 1000 lb	2.90
1000 lb	2.95
less than 1000 lb..	3.00
98.8% minus 65 mesh, freight allowed:	
1000 lb and over..	2.90
less than 1000 lb ..	3.00
Molybdenum:	
99%, minus 80 to 200 mesh, over 500 lb	2.25
200 to 500 lb	2.60
less than 200 lb ..	2.75
82-88%, freight allowed. 2000 lb and over..	2.40
less than 2000 lb..	2.45
Chromium, electrolytic 99% Cr min.	3.50

METALLURGICAL COKE

Price per net ton

BEEHIVE OVENS

Connellsvll.fur. .$14.00-14.50
Connellsvll.fdry. ...15.50-16.50
New River, foundry ...19.00
Wise county, foundry..15.95
Wise county, furnace..15.20

OVEN FOUNDRY COKE

Kearney, N. J., ovens..$22.00
Everett, Mass., ovens
New England, del..‡23.40
Chicago, ovens 21.00
Chicago del. .....†22.45
Detroit, del. 24.91
Terre Haute, ovens ...21.20
Milwaukee, ovens 21.75
Indianapolis, ovens 20.75
Chicago, del. 24.12
Cincinnati, del. 23.67
Detroit, del. 24.65
Ironton, O., ovens 20.40
Cincinnati, del. 22.71
Painesville, O., ovens..21.90
Buffalo, del. 24.02
Cleveland, del. 23.62
Erie, del. 22.04
Birmingham, ovens 19.15
Birmingham, del. ...20.20
Philadelphia, ovens ...21.25
Neville Island, Pa., ovens 21.00
Swedeland, Pa., ovens..21.20
St. Louis, ovens 22.99
St. Louis, del. 24.12
Portsmouth, O., ovens..20.15
Cincinnati, del. 22.71
Detroit, ovens 21.65
Detroit, del. *22.65
Buffalo, del. 24.69
Flint, del. 24.09
Pontiac, del. 23.04
Saginaw, del. 24.40

Includes representative switching charge of: *, $1.00; †, $1.45, one-track charge being $1.20, two tracks $1.40, and three or more tracks $1.50. ‡ Or within $4.15 freight zone from works.

WAREHOUSE STEEL PRODUCTS

(Prices, cents per pound, for delivery within switching limits, subject to extras)

	SHEETS			STRIP		BARS			Standard Structural Shapes	PLATES	
	H.R. 18 Ga., Heavier*	C.R.	Gal. 10 Ga.†	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.	H.R. Alloy 4140§		Carbon	Floor
New York(city)	5.82	6.84	7.73	6.14	...	5.97	6.64	8.60	5.95	6.18	7.64
New York(c'try)	5.52	6.64	7.53	5.84	...	5.67	6.44	8.40	5.65	5.88	7.34
Boston (city) ..	5.95	6.75	7.37	5.90	...	5.80	6.39	8.70	5.95	6.28	7.48
Boston (c'try) .	5.75	6.55	7.17	5.70	...	5.60	6.19	8.50	5.75	6.08	7.28
Phila. (city) ..	6.60-6.70	6.75	7.10	5.90	...	5.85	6.46	8.40	5.70	5.90	7.00
Phila. (c'try)..	6.35-6.45	6.50	6.85	5.65	...	5.60	6.21	8.15	5.45	5.65	6.75
Balt. (city) ...	5.35	6.59	6.66	5.79	...	5.79	6.39	...	5.89	5.60	7.24
Balt. (c'try) ..	5.15	6.39	6.46	5.59	...	5.59	6.19	...	5.69	5.40	7.04
Norfolk, Va. ..	6.10	...	...	6.30	...	6.15	7.20	...	6.20	6.15	7.55
Richmond, Va..	5.55	...	6.80	5.83	...	5.73	6.30	...	5.83	5.65	7.33
Wash. (w'hse).	5.56	6.80	6.73	6.00	...	6.00	6.62	...	6.10	5.81	7.45
Buffalo (del.)..	5.35	6.15	7.10	5.61	...	5.35	5.95	10.10††[8]	5.55	5.85	7.15
Buffalo (w'hse).	5.15	5.95	6.90	5.41	...	5.15	5.75	9.90††[8]	5.35	5.65	6.95
Pitts. (w'hse)..	5.15	5.95*	6.70-6.95	5.20	6.15	5.10	5.75	9.55††	5.25	5.35	6.60
Detroit (w'hse)	5.33	6.08*	7.09	5.49	...	5.39	5.91	9.86††[8]	5.64	5.79	6.88
Cleveland (del.)	5.35	6.15	7.50	5.44	6.35	5.32	5.95	8.31	5.57	5.72	6.92
Cleve. (w'hse).	5.15	5.95	7.30	5.24	6.15	5.12	5.75	8.16	5.37	5.52	6.72
Cincin. (city)..	5.57	6.14	6.54	5.50	...	5.50	6.11	...	5.79	5.94	7.10
Chicago (city) .	5.35	6.15	7.15	5.30	...	5.30	5.85	9.75††[8]	5.45	5.60	6.80
Chicago (w'hse)	5.15	5.95	6.95	5.10	...	5.10	5.65	9.55††[8]	5.25	5.40	6.60
Milwaukee(city)	5.49	6.29	7.29	5.44	...	5.44	6.09	9.89††[8]	5.59	5.74	6.94
Milwau. (c'try)	5.29	6.09	7.09	5.24	...	5.24	5.89	9.69††[8]	5.39	5.54	6.74
St. Louis (del.)	5.68	6.48	7.28	5.63	...	5.63	6.28	10.08††[8]	5.78	5.93	7.13
St. L. (w'hse).	5.48	6.28	7.08	5.43	...	5.43	6.08	9.88††[8]	5.58	5.73	6.93
Kans. City(city)	5.95	6.75	7.60	5.90	...	5.90	6.55	...	6.05	6.20	7.60
KansCity(w'hse)	5.75	6.55	7.40	5.70	...	5.70	6.35	...	5.85	6.00	7.40
Omaha, Nebr. .	6.13‡	...	8.33	6.13	...	6.18	6.98	...	6.18	6.38	7.83
Birm'ham (del.)	5.30	6.10	6.30[2]	5.25	...	5.25	6.88	...	5.40	5.55	7.83
Birm'hm(w'hse)	5.15	5.95	6.15[2]	5.10	...	5.10	...	...	5.25	5.40	...
Los Ang. (city)	6.10	7.65	8.20	6.15	8.90	6.10	7.75	...	6.10	6.20	8.40
L. A. (w'hse)..	5.90	7.45	8.00	5.95	8.70	5.90	7.55	...	5.90	6.00	8.20
San Francisco .	6.50[9]	7.60[2]	7.50[2]	7.45[9]	8.25[2]	6.30[9]	7.55	...	6.30[9]	6.40[9]	8.50[9]
Seattle-Tacoma.	6.60	8.15[3]	...	6.85	...	6.35	8.50	10.10	6.20	6.35[7]	8.40[7]

* Prices do not include gage extras; † prices include gage and coating extras, except Birmingham (coating extra excluded) and Los Angeles (gage extra excluded); ‡ includes extra for 10 gage; § as rolled; †† as annealed. Base quantities, 2000 to 9999 lb except as noted: Cold-rolled strip, 2000 lb and over; cold-finished bars, 2000 lb and over; [2]—500 to 1499 lb; [3]—450 to 1499 lb; [8]—1000 to 1999 lb; [7]—300 to 999 lb; [9]—400 to 9999 lb.

REFRACTORIES

(Prices per 1000 bricks, f.o.b. plant)

FIRE CLAY BRICK

Super Duty: St. Louis, Vandalia, Farber, Mexico, Mo., Olive Hill, Ky., Clearfield, or Curwensville, Pa., Ottawa, Ill., $106. Hard-fired, $142 at above points.

High-Heat Duty: Salina, Pa. $91; Woodbridge, N. J., St. Louis, Farber, Vandalia, Mexico, Mo., West Decatur, Orviston, Clearfield, Beach Creek, or Curwensville, Pa., Olive Hill, Hitchins, Haldeman, or Ashland, Ky., Troup, or Athens, Tex., Stevens Pottery, Ga., Portsmouth, or Oak Hill, O., Ottawa, Ill., $86.

Intermediate-Heat Duty: St. Louis, or Vandalia, Mo., West Decatur, Orviston, Beach Creek, or Clearfield, Pa., Olive Hill, Hitchins, or Haldeman, Ky., Athens, or Troup, Tex., Stevens Pottery, Ga., Portsmouth, O., Ottawa, Ill., $80.

Low-Heat Duty: Oak Hill, or Portsmouth, O., Clearfield, Orviston, Pa., Bessemer, Ala., $72; Ottawa, Ill., $70.

LADLE BRICK

Dry Press: Freeport, Merill Station, Clearfield, Pa., Irondale, Wellsville, O., Chester, W. Va., New Cumberland, W. Va., $60.

Wire Cut: Chester, W. Va., Wellsville, O., New Cumberland, W. Va., $58.

MALLEABLE BUNG BRICK

St. Louis, Mo., Olive Hill, Ky., $96; Ottawa, Ill., $90; Beach Creek, Pa., $86.

SILICA BRICK

Mt. Union, Claysburg, or Sproul, Pa., Portsmouth, O., Ensley, Ala., $86; Hays, Pa., $91; Joliet or Rockdale, Ill., E. Chicago, Ind., $95; Lehi, Utah, Los Angeles, $101.

Eastern Silica Coke Oven Shapes (net ton): Claysburg, Mt. Union, Sproul, Pa., Birmingham, $84.

Illinois Silica Coke Oven Shapes (net ton): Joliet or Rockdale, Ill., E. Chicago, Ind., Hays, Pa., $85.

BASIC BRICK

(Base prices per net ton; f.o.b. works, Baltimore or Chester, Pa.)

Burned chrome brick, $68; chemical-bonded chrome brick, $72; magnesite brick, $94; chemical-bonded magnesite, $83.

MAGNESITE

(Base prices per net ton, f.o.b. works, Chewelah, Wash.)

Domestic dead-burned, ⅜" grains; bulk, $33; single paper bags, $38.

DOLOMITE

(Base prices per net ton)

Domestic, dead-burned bulk; Bonne Terre, Mo., Blue Bell, Williams, Millville, W. Va., Gibsonburg, Woodville, O., $12.25; Thornton, McCook, Ill., $12.35; Dolly Siding, Mo., $12.45; Martin, Millersville, Narlo, Clay Center, and Bettsville, O., Billmeyer, Plymouth Meeting, Pa., $13.

ORES

LAKE SUPERIOR IRON ORE

Gross ton, 51½% (natural), lower lake ports. After Jan. 25, 1950, increases or decreases, if any, in upper lake rail freight, dock handling charges and taxes thereon are for buyer's account.

Old range bessemer	$8.10
Old range nonbessemer	7.95
Mesabi bessemer	7.85
Mesabi nonbessemer	7.70
High phosphorus	7.70

EASTERN LOCAL ORE

Cents per unit, del. E. Pa.

Foundry and basic 56.62% concentrates contract	16.00

FOREIGN ORE

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 60 to 68%:	
Spot	17.00
Long-term contract	15.00
North African hematites	15.75
Brazilian iron ore, 68-69%	18.00

TUNGSTEN ORE

Net ton unit, duty paid

Chinese	$29.00-$30.00
Brazilian	29.00-30.00
Bolivian	29.00-30.00
Domestic scheelite, del.	32.00

MANGANESE ORE

Long term contracts, nominal; nearby, 48%, duty paid, 79.8c-81.8c per long ton unit, c.i.f. U. S. ports; prices on lower grades adjusted to manganese content and impurities.

CHROME ORE

Gross ton, f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., or Tacoma, Wash.

Indian and African

48% 2.8:1	$32.50
48% 3:1	35.00-36.00
48% no ratio	26.00

South African Transvaal

44% no ratio	$17.00-18.00
45% no ratio	17.30-18.30
48% no ratio	26.00
50% no ratio	27.00-27.50

Brazilian

44% 2.5:1 lump	$32.00

Rhodesian

45% no ratio	$20.00-21.00
48% no ratio	26.00
48% 3:1 lump	35.00-36.00
Domestic—rail nearest seller	
48% 3:1	$39.00

MOLYBDENUM

Sulphide concentrates per lb, molybdenum content, mines	$0.90

FERROALLOYS

MANGANESE ALLOYS

Spiegeleisen: (19-21% Mn, 1-3% Si), Carlot per gross ton, $69, Palmerton, Pa.; $70, Pittsburgh and Chicago; (16% to 19% Mn) $1 per ton lower.

Standard Ferromanganese: (Mn 78-82%, C7% approx.) Carload, lump, bulk $172 per gross ton of alloy, cl., packed, $184; gross ton lots, packed, $199; less gross ton lots, packed, $216; f.o.b. Alloy, W. Va., Niagara Falls, N. Y., or Welland, Ont. Base price: $174, f.o.b. Birmingham and Johnstown, Pa., furnaces, $172, Sheridan, Pa.; $175, Etna, Pa. Shipment from Pacific Coast warehouses by one seller add $33 to above prices, f.o.b. Los Angeles, San Francisco, Portland, Oreg. Shipment from Chicago warehouse, ton lots, $214; less gross ton lots, $231 f.o.b. Chicago. Add or subtract $2.15 for each 1% or fraction thereof, of contained manganese over 82% and under 78%, respectively.

Low-Carbon Ferromanganese, Regular Grade: (Mn 80-85%). Carload, lump, bulk, max. 0.10% C, 24.75c per lb of contained Mn, carload packed 25.5c, ton lot 26.6c, less ton 27.8c. Delivered. Deduct 0.5c for max. 0.15% C grade from above prices, 1c for max. 0.30% C, 1.5c for max. 0.50% C, and 4.5c for max. 75% C—max. 7% Si. **Special Grade:** (Mn 90% approx., C 0.07% max., P 0.06% max.). Add 0.5c to above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.5% max., Si 1.5% max.). Carload, lump, bulk 18.15c per lb of contained Mn, carload packed 18.9c, ton lot 20.0c, less ton 21.2c. Delivered. Spot, add 0.25c.

Manganese Metal, 2" x D (Mn 96% min., Fe 2% max., Si 1% max., C 0.2% max.): Carload lump bulk, 29c per lb of metal; packed, 29.75c; ton lot 31.25c; less ton lot 33.25c. Delivered. Spot, add 2c.

Manganese, Electrolytic: 250 lb to 1999 lb, 32c; 2000 to 39,999 lb, 30c; 40,000 lb or more, 28c. Premium for hydrogen-removed metal 1.5c per pound, f.o.b. cars Knoxville, Tenn. Freight allowed to St. Louis or to any point east of Mississippi.

Silicomanganese: (Mn 65-68%). Contract, lump, bulk, 1.50% C grade, 18-20% Si, 8.95c per lb of alloy, carload packed, 9.70c, ton lot 10.60c, less ton 11.60c. Freight allowed. For 2% C grade, Si 15-17%, deduct 0.2c from above prices. Spot, add 0.25c.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l., lump, bulk, 20.5c per lb of contained Cr. c.l., packed 21.4c, ton lot 22.55c, less ton 23.95c. Delivered. Spot, add 0.25c.

"SM" High-Carbon Ferrochrome: (Cr 60-65%, Si 4-6%, Mn 4-6%, C 4-6%). Add 1.1c to high-carbon ferrochrome prices.

(*Please turn to page* 189)

Metal Prices Continue Upward

Price adjustments encompass primary and finished products. Demand for nonferrous metal relentless. Government and industry men confer on what to allocate and how to do it

THE CRUSH of demand on the supply of nonferrous metals is getting greater. The pressure mounts with each new defense demand, both real and anticipated, that is superimposed on what already is the heaviest civilian demand ever experienced.

As inevitably happens when demand strengthens, prices rise. Last week there were additional price increases in the nonferrous field.

Government and industry men conferred, meanwhile, on how to allocate nonferrous metals. No plan has evolved yet but there was belief that a voluntary allocations program rather than a mandatory one would be tried first.

Zinc Products Prices Rise

Recent rise of slab zinc to 17.5 cents, East St. Louis, was followed last week by increases in prices of zinc sheets, strip and plate by additional rollers. The increases were not identical among the various rollers, and as a result the general market showed these ranges, f.o.b. mill: 23.50 cents to 23.75 cents for sheet zinc, 22.50 cents to 23.00 cents for strip zinc, 21.50 cents to 22 cents for small plates, and 22.50 cents to 23 cents for large plates.

The recent 2.5-cent rise in slab zinc to 17.5 cents, East St. Louis, for prime western grade has not discouraged consumer demands, which are far in excess of supply. Particularly heavy is the demand from galvanizers and die casters. Sellers are rationing supplies on the basis of past consumption records of their regular customers.

Extreme scarcity of slab zinc is pointed up in a report by the American Zinc Institute that less than one week's supply was held by smelters at the end of August. The situation is portrayed graphically in the accompanying chart.

At the end of August, stocks of slab zinc totaled only 14,451 tons, a drop of 5966 tons from the 20,417 tons on hand at the end of July. This decline put the stocks at their lowest level since July, 1941, when they amounted to 13,848 tons.

Shipments of slab zinc by United States smelters in August totaled only 79,365 tons, far below the tonnage wanted by consumers. In July they shipped 84,116 tons; in August, 1949, they shipped 74,339 tons.

The decline in shipments was accounted for principally in a decrease in the amount of zinc delivered to the government for stockpiling; sent to the stockpile were 7399 tons, compared with 16,626 tons in July. Domestic consumers received 69,073 tons in August, compared with 67,119 tons in the preceding month.

Unfilled orders on smelters' book at the end of August totaled 76,847 tons, compared with 67,463 tons at the end of July and 41,336 tons at the end of August, 1949.

Slab zinc production last month amounted to 73,399 tons, compared with 77,868 tons in July and 73,819 tons in August, 1949.

Copper Alloy Products Up

In recognition of higher prices for raw materials they buy, some of the important manufacturers of copper and copper alloy products have posted price increases.

Although the price of primary copper has not risen, additional users of the metal are recognizing the 24.5-cent price of some of the major producers. The two largest domestic producers of primary copper continued to price their sales at 22.5 cents a pound for October shipment.

Other factors in the price increases in copper alloy products are the recent rises in zinc and lead prices.

Shortage of copper has caused a reduction of approximately 30 per cent in September production schedules of Copperweld Steel Co.'s Wire & Cable Division, Glassport, Pa.

Mercury Price Goes Up

Also in the upward price spiral is mercury. In the face of a scarcity it rose last week $5 a flask to a level of $85 for a 76-pound flask.

The scarcity is particularly evident in metal available for spot delivery. Some important sellers are limiting sales to lots of only ten flasks; formerly they offered 100 or more flasks.

Large consumers who bought heavily in recent months are out of the market but their big buying has left the market bare of supplies.

Cadmium Price Advances

Cadmium became higher priced last week when American Zinc, Lead & Smelting Co. announced that effective Sept. 15 it would charge $2.40 a pound for the metal. That is an increase of 25 cents a pound.

Platinum Price Climbs

Price increases encompassed platinum last week. Price on it was advanced $13 an ounce by the leading United States refiner. New prices are $100 an ounce for bulk quantities and $103 for smaller lots. The same company raised its prices $13 an ounce at the end of last month.

Demand for platinum has been spurred by defense needs. Sales to the jewelry trade are being restricted.

Antimony Quoted Higher

Antimony price rose too last week. National Lead Co. announced it was advancing its antimony price 3.5 cents a pound Sept. 11 to 32 cents, f.o.b. Laredo, Tex., for carload lots.

Previous increase was made on Aug. 31 when the price went up 4 cents a pound to 28.5 cents.

Aluminum Output Rate Rises

The United States aluminum industry is now producing primary metal at the rate of 1450 million pounds a year, or 17 per cent greater than total production in 1949.

This was pointed out by Donald M. White, secretary of the Aluminum Association, New York, in reporting July production of 127,035,442 pounds, compared with 120,800,774 pounds in June.

Shipments of aluminum sheet and plate during July totaled 90,937,020 pounds, compared with 93,001,858 pounds in June.

Zinc Stocks Melt Away to 9-Year Low

. . . prices at highest level since March, 1949; supply, less than a week's

(Smelters' Stocks in Net Tons)

NONFERROUS METALS

(Cents per pound, carlots, except as otherwise noted)

Primary Metals

Copper: Electrolytic 22.50-24.50c, Conn. Valley; Lake 24.62½c, delivered.

Brass Ingot: 85-5-5-5 (No. 115) 25.50c; 88-10-2 (No. 215) 35.00c; 80-10-10 (No. 305) 29.50c; No. 1 yellow (No. 405) 21.75c.

Zinc: Prime western 17.50c; brass special 17.75c; intermediate 18.00c, East St. Louis; high grade 18.60c, delivered.

Lead: Common 15.80c; chemical 15.90c; corroding 15.90c, St. Louis.

Primary Aluminum: 99% plus, ingots 17.50c, pigs 16.50c. Base prices for 10,000 lb and over. Freight allowed on 500 lb or more but not in excess of rate applicable on 30,000 lb c.l. orders.

Secondary Aluminum: Piston alloys 25.50-26.50c; No. 12 foundry alloy (No. 2 grade) 25.00-25.50c; steel deoxidizing grades, notch bars, granulated or shot; Grade 1, 26.50c; grade 2 25.00c; grade 3, 24.50c; grade 4, 24.00c. Prices include freight at carload rate up to 75 cents per 100 lb.

Magnesium: Commercially pure (99.8%) standard ingots, 10,000 lb and over 22.50c, f.o.b. Freeport, Tex.

Tin: Grade A, prompt and September 103.50, October 103.00c, November 103.00c.

Antimony: American 99-99.8% and over but not meeting specifications below 32.00c; 99.8% **and over (arsenic 0.05% max.;** other impurities 0.1% max.) 32.50c; f.o.b. Laredo, Tex., **for bulk shipments. Foreign, 99%; Chinese** nom.; English, nom.; Belgian, 28.50c, duty paid, **New York.**

Nickel: Electrolytic cathodes, 99.9%, base sizes at refinery, unpacked, 48.00c; 25-lb pigs, 50.50c; "XX" nickel shot, 51.50c; "F" nickel shot or ingots, for addition to cast iron, 48.50c. Prices include import duty.

Mercury: Open market, spot, New York $80-$82 per 76-lb flask.

Beryllium-Copper: 3.75-4.25% Be, $30.00 per lb contained Be, f.o.b., Cleveland and Reading, Pa.

Cadmium: "Regular" straight or flat forms, $2.40 del.; special or patented shapes, $2.55.

Cobalt: 97-99%, $1.80 per lb for 500 lb (keg); $1.82 per lb for 100 lb (case); $1.87 per lb under 100 lb.

Gold: U. S. Treasury, $35 per ounce.

Silver: Open market, New York, 72.75c per oz.

Platinum: $100-$103 per ounce from refineries.

Palladium: $24 per troy ounce.

Iridium: $220 per troy ounce.

Titanium (sponge form): $5 per pound.

Rolled, Drawn, Extruded Products

COPPER AND BRASS

(Base prices, cents per pound, f.o.b. mill)

Sheet: Copper 39.43; yellow brass 36.52; commercial bronze, 95%, 39.43; 90%, 39.03; red brass, 85% 38.11; 80%, 37.72; best quality, 37.32; nickel silver, 18%, 50.24; phosphor-bronze, grade A, 5% 58.02.

Rods: Copper, hot-rolled 35.28; cold-drawn 36.53; yellow brass free cutting, 30.95; commercial bronze, 95% 39.12; 90% 38.72; red brass 85% 37.80; 80% 37.41.

Seamless Tubing: Copper 39.47; yellow brass 39.54; commercial bronze 90% 41.69; red brass 85% 41.02; 80% 40.63.

Wire: Yellow brass 36.82; commercial bronze, 95% 39.72; 90% 39.32; red brass, 85% 38.40; 80% 38.01; best quality brass 37.61.

Copper Wire: Bare, soft, f.o.b. eastern mills, c.l. 26.67-28.67, l.c.l. 27.17-29.17, 100,000 lb lots 26.545-28.545; weatherproof, f.o.b. eastern mills, c.l. 28.10-29.60, l.c.l. 28.60-30.10, 100,000 lb lots 27.85-29.35; magnet, del., 15,000 lb or more 32.50-34.50, l.c.l. 33.25-35.25.

ALUMINUM

(30,000 lb base; freight allowed on 500 lb or more, but not in excess of rate applicable on 30,000 lb c.l. orders.

Sheets and Circles: 2S and 3S mill finish c.l.

Thickness Range, Inches	Widths or Diameters, In., Incl.	Flat Sheet Base*	Coiled Sheet Base	Coiled Sheet Circle† Base
0.249-0.136	12-48	27.4	...	...
0.135-0.096	12-48	27.9	...	...
0.095-0.077	12-48	28.4	26.5	30.1
0.076-0.061	12-48	29.0	26.7	30.3
0.060-0.048	12-48	29.2	26.9	30.6
0.047-0.038	12-48	29.6	27.1	30.9
0.037-0.030	12-48	30.0	27.5	31.4
0.029-0.024	12-48	30.4	27.8	31.8
0.023-0.019	12-36	31.0	28.2	32.3
0.018-0.017	12-36	31.6	28.8	33.1
0.016-0.015	12-36	32.3	29.4	34.0
0.014	12-24	33.2	30.2	35.1
0.013-0.012	12-24	34.1	30.9	36.0
0.011	12-24	35.1	31.8	37.2
0.010-0.0095	12-24	36.1	32.8	38.5
0.009-0.0085	12-24	37.3	33.9	40.0
0.008-0.0075	12-24	38.6	35.1	41.6
0.007	12-18	40.0	36.4	43.4
0.006	12-18	41.5	37.7	47.5

* Minimum length, 60 inches. † Maximum diameter, 24 inches.

Screw Machine Stock: 5000 lb and over.

Diam. (in.) or distance across flats	—Round— R317-T4, 17S-T4	R317-T4	——Hexagonal—— 17S-T4
0.125	48.5	....	....
0.156-0.203	41.5	....	....
0.219-0.313	38.5	....	....
0.344	37.5	....	47.5
0.375	37.0	46.0	44.5
0.406	37.0	....	....
0.438	37.0	46.0	44.5
0.469	37.0	....	....
0.500	37.0	46.0	44.5
0.531	37.0	....	....
0.563	37.0	....	42.0
0.594	37.0	....	....
0.625	37.0	43.5	42.0
0.656	37.0	....	....
0.688	37.0	....	42.0
0.750-1.000	36.0	41.0	39.5
1.063	36.0	....	38.0
1.125-1.500	35.0	39.5	38.0
1.563	35.0	....	37.0
1.625	34.0	....	37.0
1.688-2.000	34.0	....	....

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh) Sheets: Full rolls, 140 sq ft or more $21.00 per cwt; add 50c cwt, 10 sq ft to 140 sq ft. Pipe: Full coils $21.00 per cwt. Traps and bends: List prices plus 60%.

ZINC

Sheets, 23.50-23.75c, f.o.b. mill, 36,000 lb and over. Ribbon zinc in coils, 22.50-23.00c, f.o.b. mill, 36,000 lb and over. Plates, not over 12-in., 21.50-22.00c; over 12-in., 22.50-23.00c.

"A" NICKEL

(Base prices f.o.b. mill)

Sheets, cold-rolled, 69.00c. Strip, cold-rolled, 75.00c. Rods and shapes, 65.00c. Plates, 67.00c. Seamless tubes, 98.00c.

MONEL

(Base prices, f.o.b. mill)

Sheets, cold-rolled 53.00c. Strip cold-rolled 56.00c. Rods and shapes, 51.00c. Plates, 52.00c. Seamless tubes, 86.00c. Shot and blocks, 46.00c.

MAGNESIUM

Extruded Rounds, 12 in. long, 1.31 in. in diameter, less than 25 lb. 55.00-59.00c; 25 to 99 lb. 45.00-49.00c; 100 lb to 5000 lb, 38.00c.

Plating Materials

Chromic Acid: 99.9% flake, f.o.b. Philadelphia, carloads, 25.50c; 5 tons and over 26.00c; 1 to 5 tons, 26.50c; less than 1 ton 27.00c.

Copper Anodes: Base 2000 to 5000 lb; f.o.b. shipping point, freight allowed; **Flat** untrimmed 34.09c; oval 33.59c; cast 32.12c.

Copper Cyanide: 70-71% Cu, 100-lb drums, 1000 lb 53.90c, under 1000 lb 55.90c, f.o.b. Niagara Falls, N. Y.

Sodium Cyanide: 96-98%, ½-oz ball, in 200 lb drums, 1 to 900 lb, 18.00c; 1000 to 19,000 lb, 17.00c, f.o.b. Niagara Falls, N. Y. Packaged in 100 lb drums add ½-cent.

Copper Carbonate: 54-56% metallic Cu; 50 lb bags, up to 200 lb, nom.; over 200 lb, nom., f.o.b. Cleveland.

Nickel Anodes: Rolled oval, carbonized, carloads, 65.00c; 10,000 to 30,000 lb, 63.00c; 3000 to 10,000 lb, 67.00c, 500 to 3000 lb, 68.00c; 100 to 500 lb, 70.00c; under 100 lb, 73.00c; f.o.b. Cleveland.

Nickel Chloride: 100-lb kegs, 29.50c; 400-lb bbl, 27.50c up to 10,000 lb, 27.00c over 10,000 lb, f.o.b. Cleveland, freight allowed on barrels, or 4 or more kegs.

Tin Anodes: Bar, 1000 lb and over, nom.; 500 to 999 lb, nom.; 200 to 499 lb, nom.; less than 200 lb, nom.; ball, 1000 lb and over, nom.; 500 to 999 lb, nom.; 200 to 499 lb, nom.; less than 200 lb, nom.; f.o.b. Sewaren, N. J.

Sodium Stannate: 25 lb cans only, less than 100 lb, to consumers nom.; 100 or 300 lb drums only, 100 to 500 lb, nom.; 600 to 1900 lb, nom.; 2000 to 9900 lb, nom.; f.o.b. Sewaren, N. J. Freight not exceeding St. Louis rate allowed.

Zinc Cyanide: 100 lb drums, less than 10 drums 46.8c, 10 or more drums 44.8c, f.o.b. Niagara Falls, N. Y.

Stannous Sulphate: 100 lb kegs or 400 lb bbl, less than 2000 lb nom.; more than 2000 lb, nom., f.o.b. Carteret, N. J.

Stannous Chloride (Anhydrous): In 400 lb bbl, nom.; 100 lb kegs nom., f.o.b. Carteret, N. J.

Scrap Metals

BRASS MILL ALLOWANCES

Prices in cents per pound for less than 15,000 lb, f.o.b. shipping point.

	Heavy Clean	Ends Rod	Turnings Clean
Copper	21.50	21.50	20.75
Yellow Brass	19.125	18.875	17.875
Commercial Bronze			
95%	20.50	20.25	19.75
90%	20.50	20.25	19.75
Red brass			
85%	20.25	20.00	19.50
80%	20.125	19.875	19.375
Muntz metal	18.125	17.875	17.375
Nickel, silver, 10%	21.25	21.00	10.625
Phos. bronze, A	22.625	22.375	21.375

BRASS INGOT MAKERS' BUYING PRICES

(Cents per pound, delivered eastern refineries, carload lots)

No. 1 copper 21.75; No. 2 copper 20.75; light copper 19.75; composition red brass 18.75-19.00; radiators 15.00; heavy yellow brass 14.25-14.50.

REFINERS' BUYING PRICES

(Cents per pound, delivered refinery, carload lots)

No. 1 copper 21.75; No. 2 copper 20.75; light copper 19.75; refinery brass (60% copper) per dry copper content 20.00.

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Copper and brass: Heavy copper and wire, No. 1 20.25-20.50; No. 2 19.25-19.50; light copper 17.75-18.00; No. 1 composition red brass 16.25-16.50; No. 1 composition turnings 16.25-16.50; mixed brass turnings 10.50-10.75; new brass clippings 16.50-16.75; No. 1 brass rod turnings 15.25-15.50; light brass 10.50-10.75; heavy yellow brass 12.00; new brass rod ends 15.50-15.75; auto radiators, unsweated 13.75-14.00; cocks and faucets, 14.75-15.00; brass pipe 15.75-16.00.

Lead: Heavy 13.75-14.00; battery plates 8.75-9.00; linotype and stereotype 15.00-15.25; electrotype 13.25-13.50; mixed babbitt 12.75-13.00.

Zinc: Old zinc 11.00-11.25; new die cast scrap 10.75-11.00; old die cast scrap 8.00-8.25.

Tin: No. 1 pewter 56.00-57.00; block tin pipe 75.00-77.00; No. 1 babbitt 50.00-52.00.

Aluminum: Clippings 2S 14.00; old sheets 11.00; crankcase 11.00; borings and turnings 7.50.

DAILY PRICE RECORD

1950	Copper	Lead	Zinc	Tin	Aluminum	Antimony	Nickel	Silver
Sept. 14	22.50-24.50	15.80	17.50	103.50	17.50	32.00	48.00	72.75
Sept. 13	22.50-24.50	15.80	17.50	102.00	17.50	32.00	48.00	72.75
Sept. 12	22.50-24.50	15.80	17.50	101.25	17.50	32.00	48.00	72.75
Sept. 11	22.50-24.50	15.80	17.50	100.50	17.50	32.00	48.00	72.75
Sept. 8-9	22.50-24.50	15.80	17.50	99.00	17.50	28.50	48.00	72.75
Sept. 7	22.50-24.50	14.80	17.50	99.00	17.50	28.50	48.00	72.75
Sept. 6	22.50-24.50	14.80	15.00	97.50	17.50	28.50	48.00	72.75
Sept. 5	22.50-24.50	14.80	15.00	95.50	17.50	28.50	48.00	72.75
Sept. 1-2	22.50-24.50	14.80	15.00	97.50	17.50	28.50	48.00	72.75
Aug. Avg.	22.870	12.726	15.00	102.12	17.50	24.648	48.00	72.75
Aug. 31	22.50-24.50	13.80	15.00	98.50	17.50	28.50	48.00	72.75
Aug. 30	22.50-24.50	13.80	15.00	99.50	17.50	24.50	48.00	72.75
Aug. 28-29	22.50-24.50	13.80	15.00	102.00	17.50	24.50	48.00	72.75
Aug. 25-26	22.50-24.50	13.80	15.00	104.50	17.50	24.50	48.00	72.75
Aug. 24	22.50-24.50	13.80	15.00	104.00	17.50	24.50	48.00	72.75
Aug. 23	22.50-24.50	13.80	15.00	102.50	17.50	24.50	48.00	72.75
Aug. 22	22.50-24.50	13.80	15.00	106.00	17.50	24.50	48.00	72.75
Aug. 21	22.50-24.50	13.80	15.00	107.75	17.50	24.50	48.00	72.75
Aug. 18-19	22.50	12.80	15.00	102.00	17.50	24.50	48.00	72.75

NOTE: Copper: Electrolytic, del. Conn. Valley; Lead, common grade, del. St. Louis; Zinc, prime western, E. St. Louis; Tin, Straits, del. New York; Aluminum primary ingots, 99%, del.; Antimony, bulk, f.o.b. Laredo, Tex.; Nickel, electrolytic cathodes, 99.9%, base sizes at refinery unpacked; Silver, open market, New York. Prices, cents per pound; except silver, cents per ounce.

IRON AND STEEL SCRAP

Consumer prices, except as otherwise noted, including brokers commissions, as reported to STEEL, Sept. 14, 1950; gross tons
Changes shown in italics.

STEELMAKING SCRAP COMPOSITE

Sept. 14	$41.08
Sept. 7	41.08
Aug. 1950	40.00
Sept. 1949	26.07
Sept. 1945	19.17

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

PITTSBURGH

No. 1 Heavy Melt.	$44.00
No. 2 Heavy Melt.	41.00
No. 1 Busheling	44.00
No. 1 Bundles	44.00
No. 2 Bundles	39.00
Heavy Turnings	43.00-44.00
Machine Shop Turnings	34.00-35.00†
Mixed Borings, Turnings	34.00-35.00†
Short Shovel Turnings.	36.50-37.00
Cast Iron Borings	35.50-36.00
Low Phos. Steel	*48.00-49.00*

Cast Iron Grades

No. 1 Cupola Cast	*45.00-46.00*
No. 1 Machinery Cast.	50.00-51.00
Charging Box Cast	43.00-44.00
Heavy Breakable Cast.	41.00-42.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	45.00-46.00
Rails, Random Lengths	48.50-49.00
Rails, 2 ft. and under.	52.00-52.50
Rails, 18 in. and under	52.50-53.00
Railroad Specialties	52.00-52.50

* Brokers' buying price.
† Crushers' buying prices.

CLEVELAND

No. 1 Heavy Melt. Steel	*$43.00-43.50*
No. 2 Heavy Melt. Steel	*37.00-37.50*
No. 1 Busheling	*43.00-43.50*
No. 1 Bundles	*43.00-43.50*
No. 2 Bundles	31.00-32.00
Machine Shop Turnings	29.50-30.00
Mixed Borings, Turnings	33.00-33.50
Short Shovel Turnings.	33.00-33.50
Cast Iron Borings	33.00-33.50
Low Phos. (electric)	*45.50-46.00*
Low Phos. (foundry)	*48.00-50.00*

Cast Iron Grades

No. 1 Cupola	*52.00-53.00*
Charging Box Cast	*46.00-47.00*
Stove Plate	*44.00-45.00*
Heavy Breakable Cast	*43.00-44.00*
Unstripped Motor Blocks	*36.00-37.00*
Brake Shoes	*40.00-41.00*
Clean Auto Cast	*54.00-55.00*
No. 1 Wheels	*46.00-47.00*
Burnt Cast	*41.00-42.00*

Railroad Scrap

No. 1 R.R. Heavy Melt.	*43.00-44.00*
R.R. Malleable	*59.00-60.00*
Rails, 3 ft and under	*60.00-61.00*
Rails, 18 in. and under	*61.00-62.00*
Rails, Random Lengths	*56.00-57.00*
Cast Steel	48.00-49.00
Railroad Specialties	49.00-50.00
Uncut Tires	*51.00-52.00*
Angles, Splice Bars	*55.00-56.00*

VALLEY

No. 1 Heavy Melt. Steel	$43.50-44.00
No. 2 Heavy Melt. Steel	39.50-40.00
No. 1 Bundles	*)43.50-44.00*
Facty. Prod. Bundles	*43.50-44.00*
No. 2 Bundles	34.00-34.50
Machine Shop Turnings.	34.00-34.50
Short Shovel Turnings.	36.00-36.50
Cast Iron Borings	36.00-36.50
Low Phos.	*46.00-46.50*

Railroad Scrap

No. 1 R.R. Heavy Melt.	*43.50-44.00*

PHILADELPHIA

No. 1 Heavy Melt. Steel	$39.00-39.50
No. 2 Heavy Melt. Steel	36.00
No. 1 Busheling	38.00
No. 1 Bundles	39.00-39.50
No. 2 Bundles	31.00-32.00
Machine Shop Turnings	*29.00*
Short Shovel Turnings.	33.00
Mixed Borings, Turnings	*27.50*
Low Phos. Punchings and Plate, elec. fur. grade	*47.00-48.00*
Low Phos. Plate, 5 ft & Under	*47.00-48.00*
Elec. Furnace Bundles	*45.00-46.00*
Heavy Turnings	39.00
No. 1 Chemical Borings	39.00
Knuckles and couplers	*47.00-48.00*
Steel car wheels	*47.00-48.00*

Cast Iron Grades

No. 1 Cupola Cast	*42.00*
No. 1 Machinery Cast	*46.00*
No. 1 Yard Cast	*40.00*
Charging Box Cast	*40.00-41.00*
Heavy Breakable Cast	*40.00-41.00*
Clean Auto Cast	*46.00*
No. 1 Wheels	46.00-47.00
Malleable	*52.00-53.00*

CINCINNATI

No. 1 Heavy Melt. Steel	*$40.00*
No. 2 Heavy Melt. Steel	*34.00*
No. 1 Busheling	*40.00*
No. 1 Bundles	*40.00*
No. 2 Black Bundles	*34.00*
No. 3 Bundles	*26.00*
Machine Shop Turnings	25.00
Short Shovel Turnings.	28.00
Mixed Borings, Turnings	27.00
Cast Iron Borings	28.00

Cast Iron Grades

No. 1 Cupola Cast	*55.00*
Charging Box Cast	*46.00*
Stove Plate	*38.00*
Heavy Breakable Cast	*41.00*
Unstripped Motor Blocks	32.00
Brake Shoes	*31.00*
Clean Auto Cast	*55.00*
Drop Broken Cast	*57.50*
Low Phos., 18 in. and under	*53.50*

Railroad Scrap

No. 1 R.R. Heavy Melt.	*44.00*
R.R. Malleable	*48.00*
Rails, Rerolling	*52.00*
Rails, Random Lengths	*50.00*
Rails, 18 in. and under	*60.00*

DETROIT

(Brokers' buying prices, f.o.b. shipping point)

No. 2 Heavy Melt. Steel	$30.00-31.00
No. 1 Bundles	*37.00-37.50*
No. 2 Bundles	29.00-30.00
No. 1 Busheling	*37.00-37.50*
Machine Shop Turnings	*25.00-25.50*
Forge Flashings	*37.00-37.50*
Short Shovel Turnings	*27.00-27.50*
Cast Iron Borings	*27.00-27.50*
Punchings & Plate Scrap	*39.00-40.00*

Cast Iron Grades

No. 1 Cupola Cast	42.00-43.00
Heavy Breakable Cast.	35.00-36.00
Clean Auto Cast	45.00-46.00

BUFFALO

No. 1 Heavy Melt. Steel	*$41.00-42.00*
No. 2 Heavy Melt. Steel	36.00-36.50
No. 1 Busheling	36.00-36.50
No. 1 Bundles	37.00-37.50
No. 2 Bundles	34.00-34.50
Machine Shop Turnings	30.00-30.50
Mixed Borings, Turnings	30.00-30.50
Cast Iron Borings	30.00-30.50
Short Shovelings	32.00-32.50
Low Phos.	41.50-42.00

Cast Iron Grades

No. 1 Cupola	38.50-39.00
No. 1 Machinery	41.00-42.00
Malleable	36.00-37.00

Railroad Scrap

Rails, 2 ft. and under.	49.00-50.00
Rails, random size.	44.00-45.00
Railroad Specialties	42.00-43.00

NEW YORK

(Brokers' buying prices f.o.b. shipping point)

No. 1 Heavy Melt. Steel	*$33.50*
No. 2 Heavy Melt. Steel	28.00-29.00
No. 1 Busheling	29.00-30.00
No. 1 Bundles	*33.50*
No. 2 Bundles	27.00-28.00
Machine Shop Turnings	*23.00-24.00*
Mixed Borings, Turnings	*23.00-24.00*
Short Shovel Turnings	*26.00*
Punchings & Plate Scrap	36.00-37.00
Low Phos. Plate, 5 ft & under	36.00-37.00
Elec. Furnace Bundles.	35.00-36.00

Cast Iron Grades

No. 1 Cupola Cast	33.00-34.00
No. 1 Machinery	35.00-36.00
Charging Box Cast	*31.00-32.00*
Heavy Breakable	*31.00-32.00*
Unstripped Motor Blocks	*26.00-27.00*

BOSTON

(F.o.b. shipping point)

No. 1 Heavy Melt. Steel	$32.00
No. 2 Heavy Melt. Steel	*25.50-26.00*
No. 1 Bundles	32.00
No. 1 Busheling	31.00-32.00
Machine Shop Turnings	23.00-23.50
Short Shovel Turnings.	25.00-25.50
Mixed Borings, Turnings	*25.00-25.50*
Bar Crops and Plate	37.00-38.00
Punchings & Plate Scrap	37.00-38.00
Chemical Borings	29.00-30.00

Cast Iron Grades

No. 1 Cupola Cast	31.00-32.00
Mixed Cast	30.00-31.00
Heavy Breakable Cast	*29.00-30.00*
Stove Plate	*30.00-31.00*

CHICAGO

No. 1 Heavy Melt. Steel	$40.00
No. 2 Heavy Melt. Steel	38.00
No. 1 Bundles	40.00
No. 2 Bundles	*34.00-35.00†*
Machine Shop Turnings	*28.00-29.00**
Mixed Borings, Turnings	*28.00-29.00**
Short Shovel Turnings	*28.00-30.00**
Cast Iron Borings	28.00-30.00
Low Phos.	*49.00-50.00*
Elec. Furnace Bundles	*40.00-41.00*
Heavy Turnings	*37.00-38.00*
Cut Structurals	44.00-45.00

Cast Iron Grades

No. 1 Cupola Cast	49.00-50.00
Clean Auto Cast	49.50-50.50
No. 1 Wheels	41.00-42.00
Stove Plate	41.00-42.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	*40.00**
Malleable	*56.00-57.00*
Rails, Random Lengths	54.00-55.00
Rails, Random Lengths	*54.00-55.00*
Rails, 2 ft and under.	59.00-60.00
Rails, 18 in. and under	60.00-61.00
Railroad Specialties	49.00-50.00
Angles, Splice Bars	53.00-54.00

* Nominal.
† Also last week's price.

BIRMINGHAM

No. 1 Heavy Melt. Steel	*$34.50-35.50*
No. 2 Heavy Melt. Steel	*31.00-32.00*
No. 1 Busheling	*31.00-32.00*
No. 2 Bundles	*29.00-30.00*
Machine Shop Turnings	27.00-28.00
Mixed Borings, Turnings	23.00-24.00
Short Shovel Turnings.	27.00-28.00
Cast Iron Borings	27.00-28.00
Bar Crops and Plate	41.00-42.00
Cut Structurals	41.00-42.00

Cast Iron Grades

No. 1 Cupola Cast	*51.00-52.00*
Stove Plate	*46.50-47.50*
No. 1 Wheels	37.00-38.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	*40.00-41.00*
R.R. Malleable	nominal
Rails, Rerolling	48.00-49.00
Rails, 3 ft and under.	48.00-49.00
Angles and Spice Bars	47.00-48.00

ST. LOUIS

No. 1 Heavy Melt. Steel	*$39.00-40.00*
No. 2 Heavy Melt. Steel	*36.00-37.00*
No. 1 Bundles	39.00-40.00
No. 2 Bundles	34.00-35.00
Machine Shop Turnings	*29.00-30.00*
Short Shovel Turnings.	30.00-31.00

Cast Iron Grades

No. 1 Cupola Cast	45.00-46.00
Charging Box Cast	*39.00-40.00*
Heavy Breakable Cast	*39.00-40.00*
Brake Shoes	44.00-45.00
Clean Auto Cast	*45.00-46.00*
Burnt Cast	38.00-39.00

Railroad Scrap

R.R. Malleable	53.00-55.00
Rails, Rerolling	57.00-58.00
Rails, Random Lengths	51.00-53.00
Rails, 2 ft and under.	56.00-58.00
Uncut Tires	*46.50-47.50*
Angles, Splice Bars.	53.00-54.00
Railroad Specialties	49.00-50.00

SAN FRANCISCO

No. 1 Heavy Melt. Steel	*$23.50*
No. 2 Heavy Melt. Steel	*21.50*
No. 1 Bundles	*23.50*
No. 2 Bundles	*21.50*
No. 3 Bundles	*16.50*
Machine Shop Turnings	9.00
Low phos, electric	37.50

Cast Iron Grades

No. 1 Cupola Cast	*44.00*

Railroad Scrap

No. 1 R.R. Heavy Melt.	*23.50*
Rails, Random Lengths	*23.50*

SEATTLE

No. 1 Heavy Melt. Steel	$24.00
No. 2 Heavy Melt. Steel	24.00
No. 1 Busheling	21.50
Nos. 1 & 2 Bundles	22.00
No. 3 Bundles	18.00
Machine Shop Turnings	15.00
Mixed Borings, Turnings	15.00
Punchings & Plate Scrap	30.00-32.50
Cut Structurals	30.00-32.50

Cast Iron Grades

No. 1 Cupola Cast	30.00-35.00
Heavy Breakable Cast.	30.00
Stove Plate	25.00-27.50
Unstripped Motor Blocks	30.00
Malleable	30.00
Brake Shoes	30.00
Clean Auto Cast	35.00
No. 1 Wheels	32.50

Railroad Scrap

No. 1 R.R. Heavy Melt	25.00
Railroad Malleable	30.00
Rails, Random Lengths	26.00
Angles and Splice Bars.	25.00

LOS ANGELES

(F.o.b. car, Los Angeles)

No. 1 Heavy Melt. Steel	$23.50
No. 2 Heavy Melt. Steel	21.50
Nos. 1 & 2 Bundles	*19.50*
No. 3 Bundles	*16.50*
Machine Shop Turnings	*12.00*
Mixed Borings, Turnings	8.00
Punchings & Plate Scrap	*44.50*

Cast Iron Grades

No. 1 Cupola Cast	*42.80*

Railroad Scrap

No. 1 R.R. Heavy Melt.	23.50
Rails, Rerolling	39.50

HAMILTON, ONT.

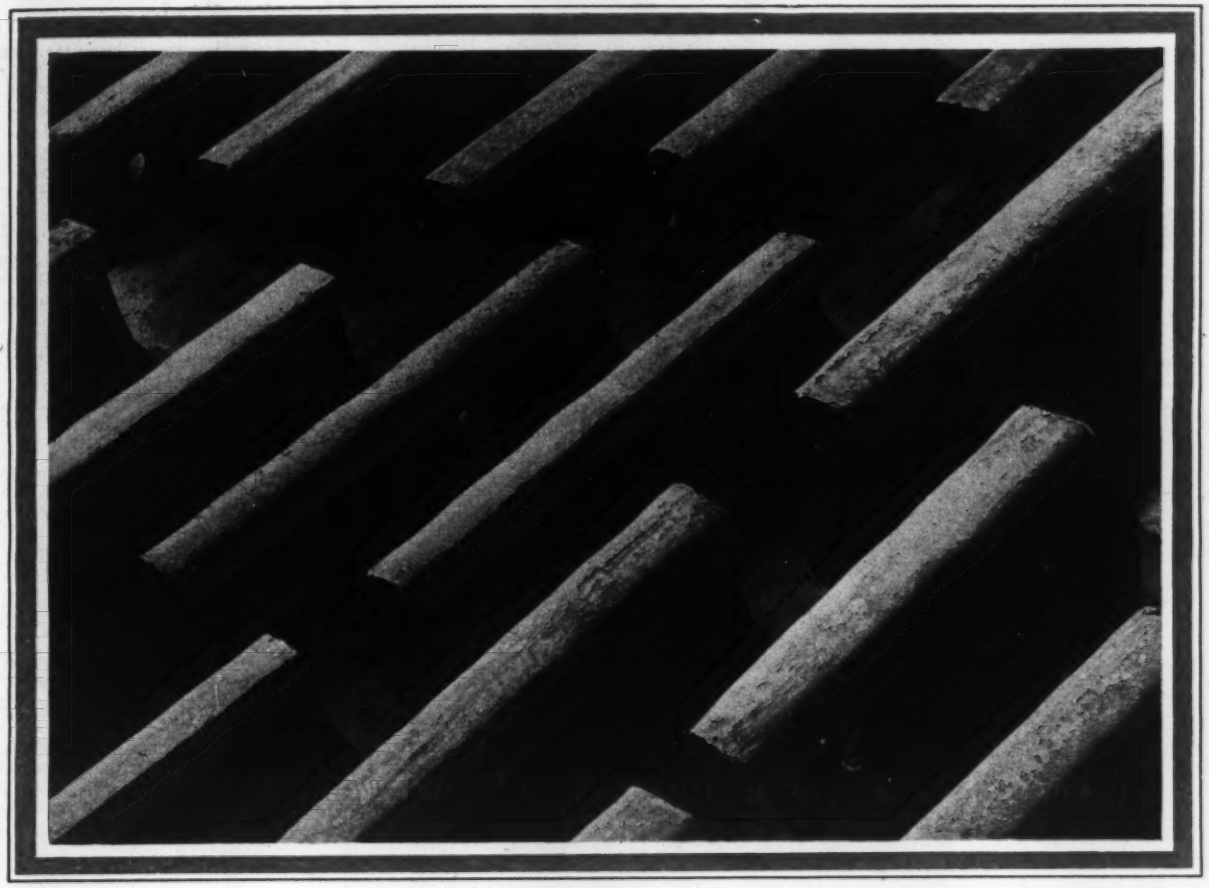
(Delivered prices)

Heavy Melt.	$30.00
No. 1 Bundles	30.00
Mechanical Bundles	28.00
Mixed Steel Scrap	28.00
Mixed Borings, Turnings	23.00
Rails, Remelting	30.00
Rails, Rerolling	33.00
Busheling	24.50
Bushelings new factory, prep'd	28.00
Bushelings new factory, unprep'd	23.00
Short Steel Turnings	23.00

Cast Iron Grades

Cast	40.00-43.00*

* F.o.b. shipping point.



cropped rail*

use:

Cut rails are used by foundries and electric furnaces in the making of castings and ingots. This grade of scrap is particularly valuable because it is heavy, short and uniform. It makes a compact, solid charge reducing heat loss in furnaces and allows a maximum charge under the electrodes of the electric furnace.

source:

Old Tee Rails from Railroads and Industrial Sidings.

This is one of a series illustrating the various types of scrap used in making iron and steel. We supply this scrap as well as all other grades of iron and steel scrap. Call on our well trained and experienced organization to solve your scrap problem.

**Cut Rails, 2 feet and under. Cropped rail ends 2 feet and under in length. Free from concrete, dirt or other foreign material*

CONSULT OUR NEAREST OFFICE FOR THE PURCHASE AND SALE OF SCRAP

LURIA BROTHERS AND COMPANY, INC.

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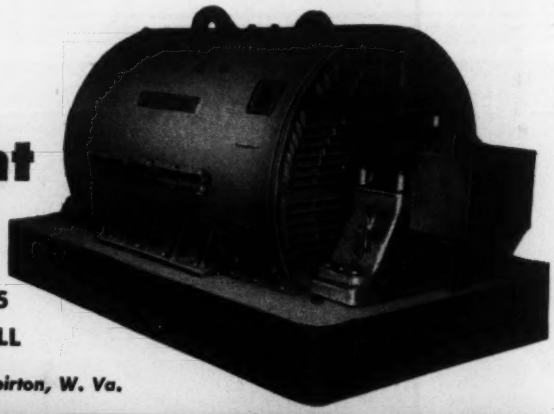
BOSTON, MASS. Statler Building	CLEVELAND, OHIO 1022 Midland Bldg	LEBANON, PENNA. Luria Building	PUEBLO, COLORADO 334 Colorado Bldg.
BUFFALO, N Y. Genesee Building	DETROIT, MICHIGAN 2011 Book Building	NEW YORK, N. Y. Woolworth Building	READING, PENNA. Luria Building

ST. LOUIS, MISSOURI
2110 Railway Exchange Bldg.

SAN FRANCISCO, CALIFORNIA
Pacific Gas & Elec. Co., Bldg.

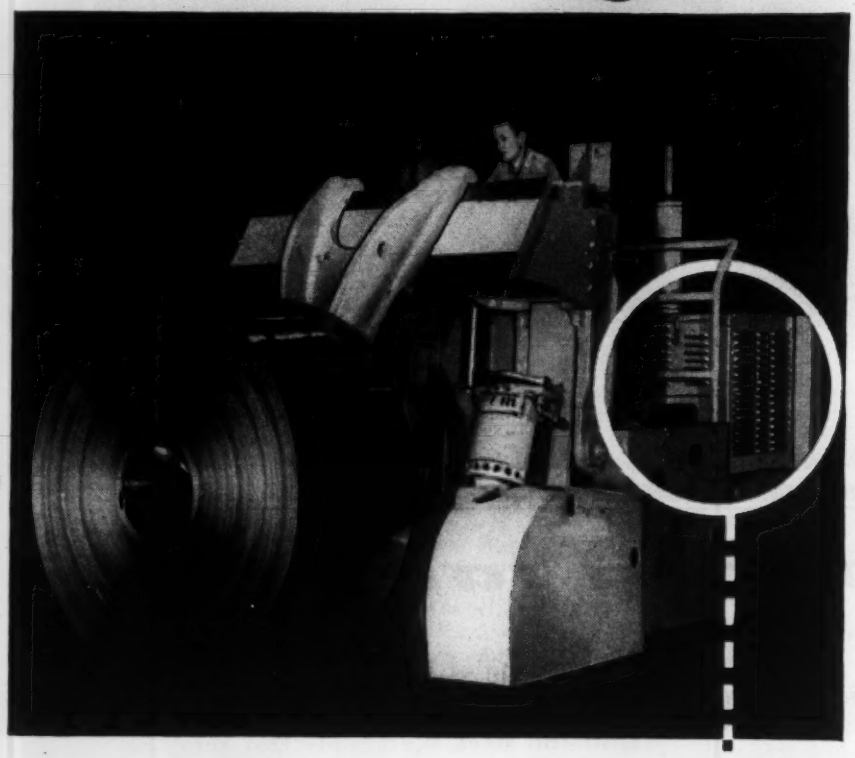
LEADERS IN IRON AND STEEL SCRAP SINCE 1889



constant power

FOR THE WORLD'S FASTEST STRIP MILL

Weirton Steel Works, Weirton, W. Va.

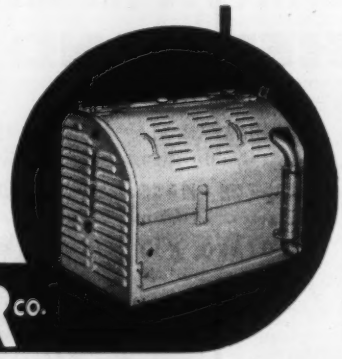


constant power

WITH READY-POWER-EQUIPPED ELECTRIC TRUCKS

Illustrated at top is one of two 2250 HP Motors at the Weirton Steel Works, Weirton, W.Va. furnishing *constant power* to drive the finishing rolls of the world's fastest cold-reduction strip mill capable of mile-a-minute production.

Equally constant and dependable is the power provided by the Ready-Power gas-electric unit on the "Automatic Skylift Giant" electric truck shown carrying one of the mill's 30,000 lb. rolls of finished strip. For electric trucks of any make or type, new or old, where constant power for hour-after-hour operation is needed—specify Ready-Power.



THE READY-POWER CO.

3824 Grand River Ave., Detroit 8, Michigan

Sheets, Strip . . .

Sheet and Strip Prices, Page 171 & 172

Boston—Metalworking shops are losing ground in maintenance of inventories. Carryovers will be heavy, armament contracts are increasing and allocations reduced. Non-integrated producers of narrow cold strip, are sold out through balance of year. Price spreads on cold strip up to $7 per ton are no factor in the pressure to buy. One leading producer has reduced December allocations of all products 10 per cent.

Extras on heavier gages of narrow cold-rolled strip are higher, Wallingford Steel Co. being the latest producer to make this move. Extras apply to 0.25 carbon and under in coils, increases ranging from $3 to $7 a ton.

New York—Sheet sellers look for some relief before end of the year in commercial demands because of growing shortage in other manufacturing materials, notably copper and zinc. However, they admit the relief would be largely theoretical, for the end of an excess demand for sheets is not in sight.

Picatinny, N. J., arsenal has closed bids on approximately 200,000 metal ammunition containers for rockets and shells.

Buffalo — Output of hot-rolled sheets at Bethlehem's Lackawanna plant is curtailed by strip mill alterations. The hot mill has been down for ten days but is expected to resume production shortly.

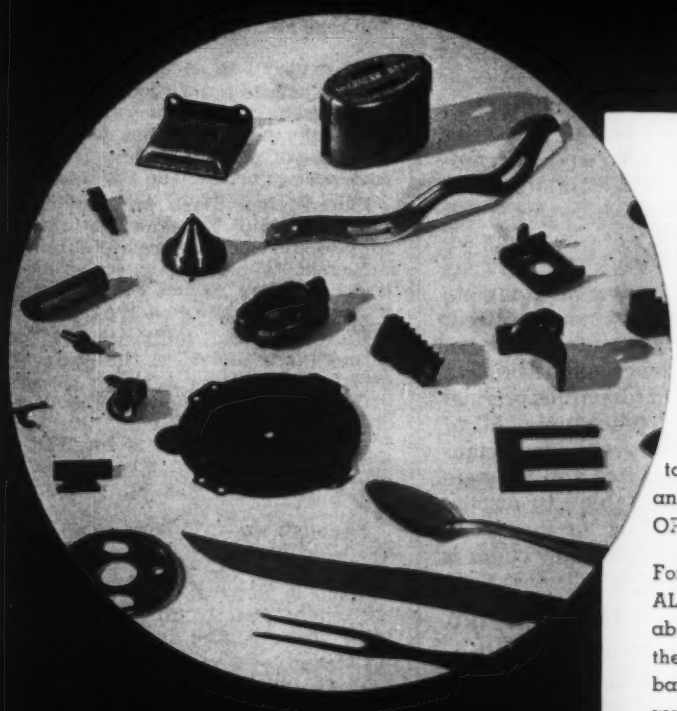
Philadelphia—Sheet buyers keep trying to get more tonnage but with little success. Only high-rated emergency work stands a chance of getting on mill books over remainder of this year. Stainless sheets and strip are tightening rapidly.

Pittsburgh—Recent advance in zinc to 17.5 cents per pound, East St. Louis, results in an automatic increase in coating extras on galvanized sheets averaging $3.60 per ton. Increase in lead price to 16 cents per pound, New York, may force upward adjustment in long ternes and manufacturing ternes. Price advance in copper has forced an increase in prices of hot and cold-rolled deoxidized copper clad strip. Consumers of sheets and strip anticipate significant reductions in monthly allotments through November and December due to preference given shipments for military requirements for such items as gasoline storage tanks, rocket and radar equipment, marine truck bodies, file cabinets for military depots, grain storage bin program, etc.

Cleveland—There is little chance for consumers to place additional business on mill books for delivery over remainder of this year. Sellers are booked full for fourth quarter. With heavy carryover into fourth quarter in prospect and expanding military requirements in the offing it will not be surprising if consumer allotments for the period are cut further back. Consumers are turning increasingly to gray market and conversion sources for supplies, with indifferent success.

Youngstown — Sheet order books are filled through fourth quarter and any military tonnage that is inserted in schedules will be at expense of customers' quotas. Because of the

Are You Finishing Your Metal Parts *the Economical Way?*



FAST, economical barrel finishing is proving more profitable in many plants than slow, hand polishing, for preparing a variety of intricate metal parts for subsequent plating operations.

You can remove objectionable heat scale, burrs, tool marks and dirt from your metal parts with this clean, modern process and with ALUNDUM Tumbling Abrasive—the ideal barrel finishing medium. You can finish large quantities of parts to exact dimensions and degrees of surface finish and prepare them for plating—ALL IN ONE OPERATION!

For full details on the barrel finishing process and ALUNDUM Tumbling Abrasive—contact your Norton abrasive engineer or distributor, or write direct to the Sales Engineering Department. If you don't have barrel finishing equipment in your plant, and if you would like to find out without obligation what this finishing process and this Norton product can do for you—Norton will be glad to make test runs for you.

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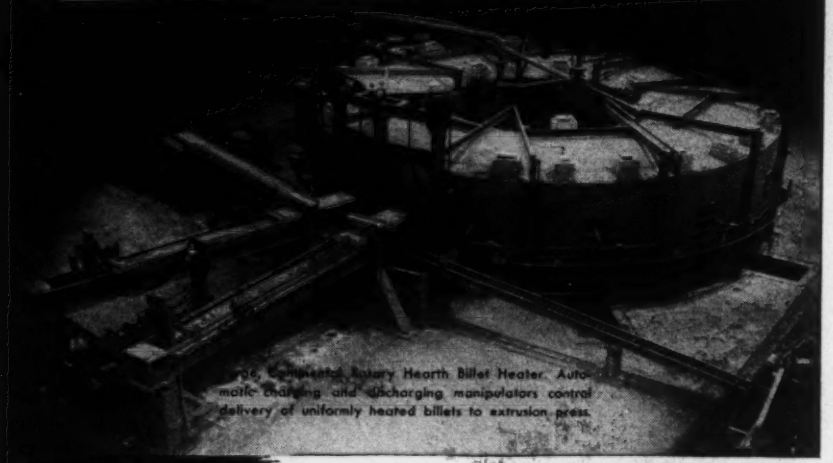

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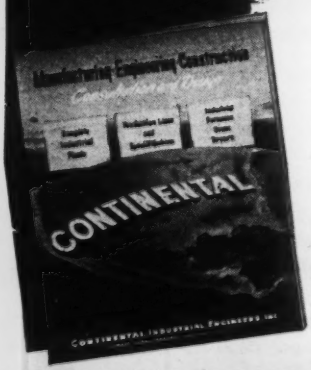

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anticipated heavy carryover from third to fourth quarter consumer allotments for the period have been severely cut.

Chicago—Many sheet consumers say only gray market and conversion purchases enable them to maintain operations at present levels. Interest in the premium markets has heightened appreciably the last few weeks. Cold-rolled sheets are being bought for as high as 18 cents a pound, up 50 per cent in two months.

Cincinnati—Sheet mill schedules for fourth quarter show slashes in allotments because of carryover and anticipated military requirements.

San Francisco—Fabricators report difficulty obtaining sheets. Many large plants are operating on inventory. Little of western mills' output is going for military purposes.

Steel Bars . . .

Bar Prices, Page 171

Pittsburgh — Alloy bar producers are reviewing commitments with object of substituting lower nickel content specifications where possible. In some instances customers have to furnish government order number before higher content nickel orders will be specified. A few instances of sellers booking tonnage for delivery early first quarter are noted.

Boston—Except for scattered openings for electric furnace alloys, bar mills are booked through fourth quarter. Spurt in alloy buying is reviving some NE grades as substitutes for high nickel-chromium specifications.

New York—Bar consumers able to supply definite proof requirements are for national emergency needs are practically the only ones who stand a chance of getting deliveries against new orders before end of this year.

Philadelphia—Bars are moving at a terrific clip. Demand far exceeds supply. Most consumers are obtaining sufficient tonnage to sustain operations but they cannot obtain enough material to increase activity.

Cleveland—Bar mills are sold out through remainder of the year and except for military tonnage there is little chance of consumers placing additional orders for delivery this year. Pressure for shipments is unrelenting. Military and related business is being given preference in mill schedules.

Youngstown—No open spaces are available in bar mill schedules over remainder of the year. Pressure of demand is so great mills are holding customers strictly to quotas which have been reduced for last quarter.

Chicago — Approximately 24,000 tons of billets were lost during the unauthorized strike at Carnegie-Illinois Gary works. One bar producer, allocating on a monthly basis, has not yet opened December books.

San Francisco—Demand for steel bars is lessening slightly. This category is in a less critical position than sheets, plates and structurals.

Seattle—Rolling mills are operating at capacity. Reinforcing bars are in strong demand. Order backlogs average 60 days. Increased interest in merchant bars is due to stock replacements and requirements of shipyards.

Ferroalloys . . .

Ferroalloy Prices, Page 175

New York—Alsifer has been advanced 1 cent per lb, reflecting in part increasing strength in aluminum. Contract price is 8.65c per lb of alloy, bulk, carlot; spot price, 8.70c.

Plates . . .

Plate Prices, Page 171

Philadelphia — Plate requirements exceed current supply despite lack of shipyard demand. Some yards are laying off men. Platemakers generally are out of the market for remainder of the year though some premium tonnage is obtainable.

Boston — Mills scheduling on a monthly basis are through November with enough tonnage backed up to fill the entire fourth quarter. Plate stringency is emphasized by the closing of one Pennsylvania unit for repairs. Full impact of the railroad car building program has yet to be felt.

New York—While some plate tonnage is being accepted for shipment before end of the year, it is mainly for national emergency work. About the only other tonnage is that offered by certain premium mills.

Pittsburgh—October plate allotments will not be adversely affected to extent previously feared. Full impact of military and related tonnage will not materialize until first quarter. Freight car tonnage is expected to increase over coming months, but the general steel shortage likely will prevent achievement of 10,000 freight car monthly output by January. Mills hope to clear up four to six weeks' carryover tonnage by year end.

Cleveland—Increasingly tight supply conditions in plates are expected to result in this product being among the first to come under strict allocation. Heavy demands for war purposes are in prospect, especially for railroad cars and military tanks. Expectations are some of the mills shortly will be asked to convert continuous sheet capacity to production of plates.

Youngstown—Opinion is expressed among steel men that some sheet-making capacity likely will be diverted to production of plates. The plate shortage is expected to grow progressively worse as demand increases under a flood of military tank and railroad car requirements. Present facilities devoted to platemaking are held inadequate to care for the prospective demand load. Consequently, it will not be surprising if several companies that produced plates on continuous mills during the last war are asked to resume production for the general market.

Chicago—Certain to be No. 1 in allocation plans are freight car builders. Car requirements are probably triple what they were before mid-year. Mill policy is to reduce quotas equitably. Few producers want to take the responsibility for deciding which industries are more essential than others so long as some steel can be shipped to all.

San Francisco—Heavy demand is tightening supplies of light gage plates. Scarcity is expected to become more acute.

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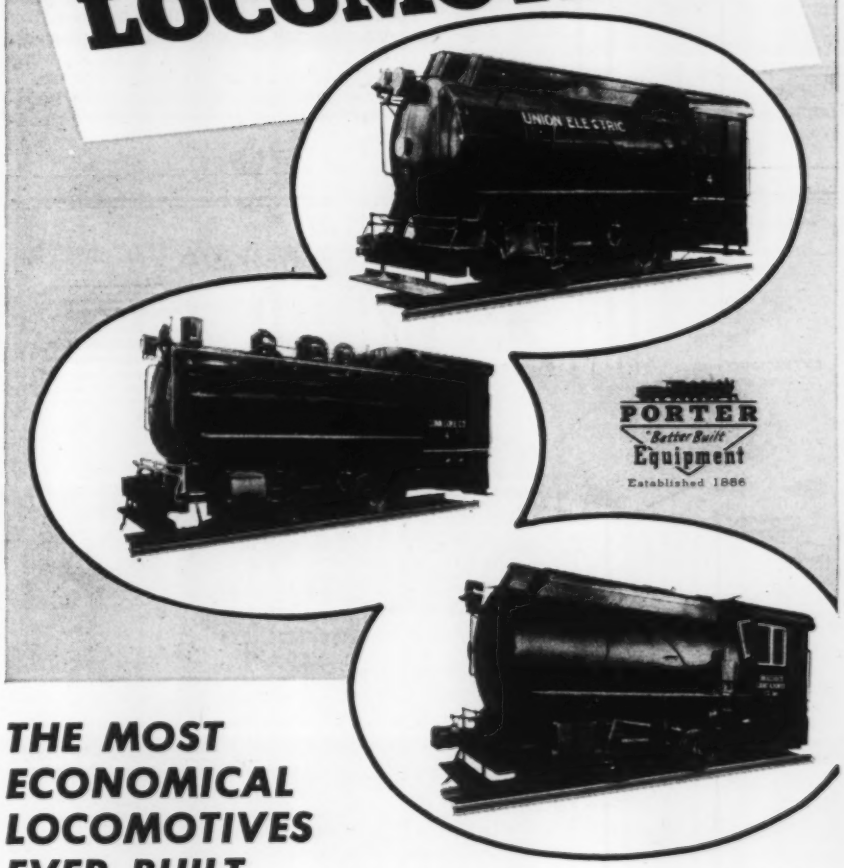

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Wire . . .

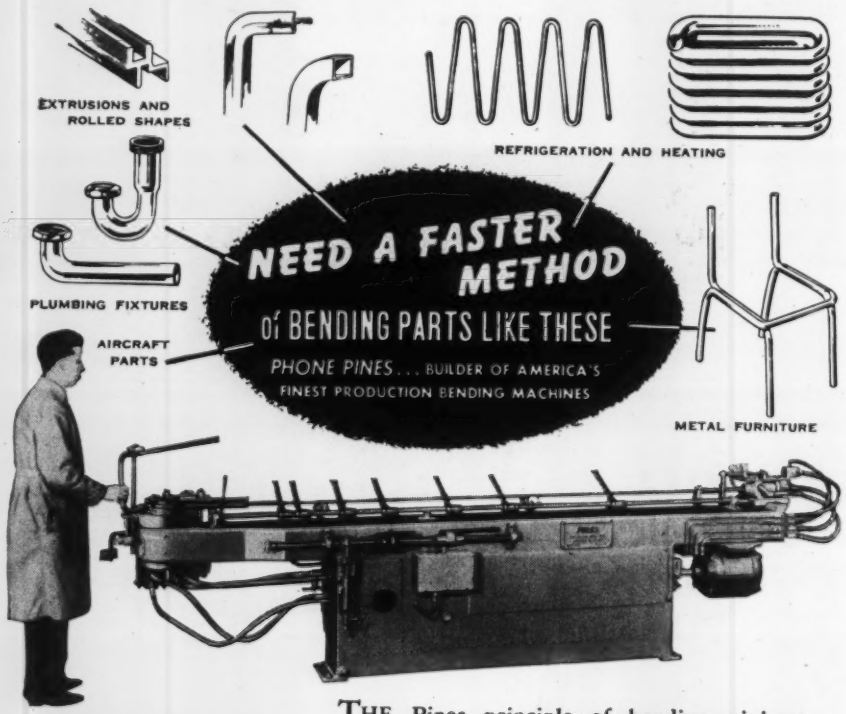
Wire Prices, Page 173

Pittsburgh—Customers' efforts to obtain mill delivery commitments into first quarter are proving fruitless. Producers are unable to estimate amount of steel available for non-essential end-uses that far ahead due to prospective large carryover into fourth quarter and unknown preferred tonnage requirements for military needs. Scarcity of wire rods retards wire production among non-integrated interests. Jobbers' inventories of merchant wire products, notably nails, are out of balance. Shortage of copper caused an approximate 30 per cent reduction in September production schedules of Copperweld Steel Co.'s wire and cable division.

Cleveland—Pressure for wire tonnage is increasing with producers booked into first quarter of next year on many items. Jobbers are especially insistent for merchant products, nails being in noticeably short supply.

Chicago—Merchant wire producers will have a carryover into first quarter on some items. Only fence post production is not fully booked for next quarter by one district interest. Nail and fence demand is outrunning supply. Paving mesh needs are up.

Los Angeles—Fabricators are hampered by short supplies of wire products.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Tubular Goods . . .

Tubular Goods Prices, Page 174

Pittsburgh—Upward price adjustments in galvanized pipe are expected due to recent sharp advance in zinc quotations to 17.5 cents per pound. Sellers report receipt of small tonnage orders for government programs. High building activity provides heavy demand for electrical conduit. Oil country goods are in heavy demand.

Youngstown—Pipe schedules are filled through fourth quarter and sellers have sufficient business on books to keep them engaged at capacity through 1951.

St. Louis—Pipe is in urgent demand. Jobbers report buttweld virtually unobtainable. Pipemakers are 60 to 90 days behind on deliveries. Galvanized pipe prices were boosted $5 a ton last week under escalator clauses tying them to zinc.

Los Angeles—Inquiries to pipe distributors for first quarter tonnage are five times greater than current sales.

Seattle—Base price of cast iron pipe has advanced $3 a ton which, with extended deliveries, places this item under a handicap in competition with other types. Potential demand for cast iron is impressive.

Pig Iron . . .

Pig Iron Prices, Page 170

New York—District foundries are not getting all the iron they want. This is causing greater interest in foreign iron, but so far little buying has been done by foundries here. Actually most of the iron brought in to date has been purchased by steel mills or large pipe foundries outside the district.

Retarding foreign purchases are substantially higher prices, with some French iron being offered around $52 to $53, c.i.f., and the extended delivery position of some foreign sellers.

Boston—No undue pressure for pig iron shipments prevails with the melt slightly heavier. The district furnace has stockpiled to cover well through fourth quarter at least.

Buffalo—Rush for merchant iron continues as more foundries increase production. Sellers are scrutinizing orders to check efforts of consumers to build inventories.

Philadelphia—Pig iron consumers who were offered foreign iron at around $48 duty paid, port, only recently are now being offered the same iron at $52 and higher. Scarcity of domestic iron is resulting in keen interest in foreign offerings and some buying at the higher level is expected.

Pittsburgh—Scarcity of pig iron is preventing some foundries from increasing production in line with increased order volume. No foundries are down because of iron shortage but many are operating below capacity. A few have made commitments for foreign pig iron, and others have increased proportion of scrap in melting operations. Shenango Furnace Co. purchased about 5000 tons of foreign iron, while Westinghouse Air Brake and other interests are reported having made similar com-

mitments.

Cleveland—Increasing shortage of pig iron is in evidence with the foundry melt expanding. Merchant sellers are distributing output as equitably as possible based upon the historical sales record of customers since the war period. In only a few cases are operations affected by the iron shortage though some casting shops could enlarge operations were more iron available.

Cincinnati—Demand for pig iron is out of proportion to the increase in the melt, because of desire of foundries to bolster stockpiles. Buyers are scouring the market for additional tonnage without much success.

Seattle—Foreign pig iron prices have been raised to the domestic price level. Foundries are contracted to the end of the year. Heretofore, foreign iron has averaged $5 or more under domestic quotations.

Structural Shapes . . .

Structural Shape Prices, Page 171

Boston—First contract for the Boston arterial highway, eventually taking close to 50,000 tons, closes Sept. 26 with Department of Public Works, Massachusetts.

New York — Extended structural deiveries, tightening shape supply and the advancing season are contributing to a slowing up in structural orders Most fabricating shops are sold ahead six months or more. Shape mills have curtailed allotments for fourth quarter.

Philadelphia—Structural buying is easing. Increasing scarcity of shapes, combined with heavy buying the past several months, has extended fabricating shop deliveries to six and seven months.

Chicago—Premium prices are being offered by contractors for prompt fabrication, and some projects are being booked in the hope those contracted for will be allowed to proceed despite building restrictions.

New Steel Powders Developed

New York—Vanadium-Alloys Steel Co., Latrobe, Pa. appointed Charles Hardy Inc., representative for Vanadium's line of ferrous alloy steel powders. The company has been in commercial production the last two years on 18-8 stainless steel, type 316 stainless steel and type 4650 alloy steel powders. Additional types of steel powders are being developed.

Charles Hardy Inc. pioneered in the first large-scale production of stainless steel powder several years ago, but only the 18-8 type was available. Extensive research work was undertaken.

Iron Ore . . .

Iron Ore Prices, Page 175

Cleveland—Shipments of Lake Sutotaling 2,787,076 tons in the week ended Sept. 11 compared with 2,810,-106 the preceding week. Average daily loading rate was 388,826 tons for the Sept. 11 week and 393,754 the preceding week from United States ports. Shipments for the season through Sept. 11 total 50,916,013 tons against 60,684,739 tons for the like period a year ago.

Oxygen cuts electric furnace melting costs over $2,000 per month

WEHR STEEL COMPANY, of Milwaukee, Wisconsin, wanted to compare the refining of acid electric steel using oxygen with that of their usual method — the use of iron ore. They hoped to reduce refining costs without affecting the quality of the finished steel.

Clarence Nolan and W. R. Lysobey, Airco Technical Sales Representatives, were called in and suggested a series of test heats using Airco oxygen. On the basis of these tests, it was found that the cost of Airco 99.5% pure oxygen is about the same as the iron ore it replaced . . . *but,* the savings in ferro manganese, heat time, electrodes and power were appreciable — amounting to more than $1.00 per ton melted on a monthly tonnage of about 2,000 tons. Furthermore, the high quality of the steel was maintained.

Additional savings were also enjoyed when the problem of handling and storing iron ore was eliminated.

The Wehr Steel Company was most pleased with these results and have adopted oxygen refining of acid electric steel as standard practice.

For technical assistance on this unique refining process or a copy of our folder "Oxygen In The Electric Furnace," please write to your nearest Airco office.

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Scrap . . .

Scrap Prices, Page 173

Pittsburgh—Brokers are unable to purchase large tonnages of No. 1 heavy melting steel within the range of $43 to $43.50 to fill recent mill orders at $44. The mills have made "packaged" purchases including No. 2 heavy and No. 2 bundles at $3 to $2 per ton respectively above previous price levels in an effort to restore more realistic price relationships based on improved quality. Mills are attempting to establish a $10 differential below No. 1 heavy melting for short shoveling turnings, a $2.50 premium for low phos, and the same price for No. 1 railroad heavy melting as for No. 1 industrial open hearth grades. To date the mills have been unsuccessful in reducing the price on short shoveling to $34, while 5-ft. low phos plate has been sold at $48 and 3-ft plate and punchings at $49.

Boston — Steelmaking scrap prices are temporarily stabilized with minor changes on the stronger side effecting No. 2 heavy melting and borings and turnings.

New York—Scrap brokers are offering $33.50 f.o.b. shipping point for No. 1 heavy melting and No. 1 bundles, slightly less than a week ago. But they are paying higher for mixed borings and turnings and short shovel turnings at $23 to $24 and $26, respectively. Also they are paying more for charging box and heavy breakable at $31 to $32 and unstripped motor blocks at $26 to $27.

Buffalo—Prices on No. 1 heavy melting scrap jumped $1.50 to $2 a ton to a range of $41-42 on sales to three smaller consumers. Prices on other steelmaking grades are nominally unchanged.

Philadelphia—While prices on major openhearth grades of scrap have become fairly stabilized the market on other grades and cast grades is generally higher.

Cleveland—The market for openhearth grades of scrap appears pretty well stabilized but cast scrap and railroad grades are churning upward sharply. No. 1 heavy melting is quoted this week at $43 to $43.50. The cast grades are up sharply on heavy demand as result of growing scarcity of pig iron. Railroad scrap is in strong demand and is none too plentiful. The railroads are not scrapping as actively as they had been. Furthermore scrap rails are commanding fancy prices.

Detroit—As stabilized price schedules become clarified, it appears the quotation on No. 1 bundles here now is in the range of $37.00-$37.50, with turnings $12 under that figure, and low phos plate $2.50 above the bundle price.

Cincinnati — Some steelmaking scrap prices were lowered $1 in conformity will mills' stabilization efforts. Cast iron is more active, with No. 1 cupola cast soaring $4, to $55.

Chicago—Mills are seeking to obtain several steelmaking grades at stabilized prices. With dealers and brokers filling old orders for turnings a test remains to be made. Important traders say they will try to hold to lower prices on blast furnace grades but believe sharply lowered prices desired by mills on railroad scrap and low phos will be a problem.

St. Louis—Scrap prices are stabilizing. Downward adjustments are being based on actual consumer demand, and mills particularly are pushing hard for lower quotations. No. 2 melting steel, however, moved up $1. Laclede Steel, which has been out of the scrap market since July, made a substantial purchase of No. 2 at $37.

San Francisco—The scrap market here shows definite signs of strength. No. 1 heavy melting steel now is quoted $23.50.

Seattle—Scrap supplies are tight although local mills are receiving sufficient tonnages to maintain operations.

Metallurgical Coke . . .

Metallurgical Coke Prices, Page 174

Pittsburgh—Growing scarcity of oven foundry coke has stimulated interest in beehive grades with consequent 50-cent per net ton increase to new price range of $15.50-$16.50. Some oven coke is being shipped here from Philadelphia.

Birmingham — Alabama By-Products Corp. will build a battery of 29 additional coke ovens at its Tarrant, Ala., operations. The ovens will have capacity for 150,000 tons annually. Contract is let to the Koppers Co. and it is hoped to have the battery in operation by next July.

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Warehouse . . .

Warehouse Prices, Page 175

Boston — Since warehouses have been shipping more steel than they have taken in, stocks have reached a point where sales are limited. Despite screening of orders one large distributor has reduced inventory 50 per cent in a month.

New York—Volume on mill books firmly committed to warehouses for fourth quarter is limited. Some producers are not scheduling for December. Carryovers will reduce placements for October while November will be subject to revisions.

Pittsburgh—Steel distributors have advanced 10 gage base price on galvanized sheets, including coating extra, 10 cents to range of $6.70-$6.95 per 100 pounds. The warehouse price increase was greater on lighter gages. The new price for 18 gage, for example, is up 20 cents to range of $8.15-$8.50 per 100 pounds.

Cleveland — Distributors' stocks are badly unbalanced and in some products, chiefly sheets and strip, are virtually depleted. The latter products are moving from warehouses as quickly as received from the mills. There is little prospect for any improvement in supply conditions over coming weeks with mill allotments reduced. Galvanized sheet prices have been adjusted upward to compensate for the increase in zinc prices. Warehouses now quote 7.50c for Cleveland delivery on No. 10 gage. Other product prices are unchanged.

Cincinnati — Warehouses face increasing difficulty in meeting needs of customers. Stocks are dwindling. Inquiries are multiplying.

Chicago — Reflecting higher price of zinc, galvanized sheets have automatically been increased by warehouses. Effective Sept. 11 warehouse price of No. 10 galvanized was raised to 6.95c in Chicago and 7.09c in Milwaukee. City delivered prices at these centers are, respectively, 7.15c and 7.29c.

Los Angeles—Distributors are unable to replenish depleted inventories sufficiently to maintain last month's peak sales.

San Francisco — Warehouses are scrambling for steel as frantically as their customers. Hot and cold-rolled sheets and strip, structurals and plates are in greatest demand.

Seattle—Demand for warehouse steel has tapered slightly. Supplies furnished by Coast mills are delivered in five to six weeks compared with two weeks previously.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 171

Boston — Lower allocations to distributors and fabricators result in selective acceptance of new orders. Reinforcing bar mills are getting less billet steel for rolling.

Chicago—Reinforcing bars are in short supply but the critical cement shortage is more of a headache to contractors.

Los Angeles—Uncertain price future is causing producers to accept tonnage cautiously. Overall requirements are steady.

Canada . . .

Toronto, Ont.—Despite record production, Canadian steel supply is becoming more critical. Tightness is due to sustained high domestic demand and curtailed imports from the United States, which have not been offset entirely by enlarged imports from Europe.

Hot and cold-rolled sheets are critically short.

Steel Co. of Canada Ltd. and Dominion Foundries & Steel Ltd., Hamilton, plan new plant installations, involving millions of dollars in expenditure. These proposed enlargements will include new open hearths, blast furnaces and coke ovens.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

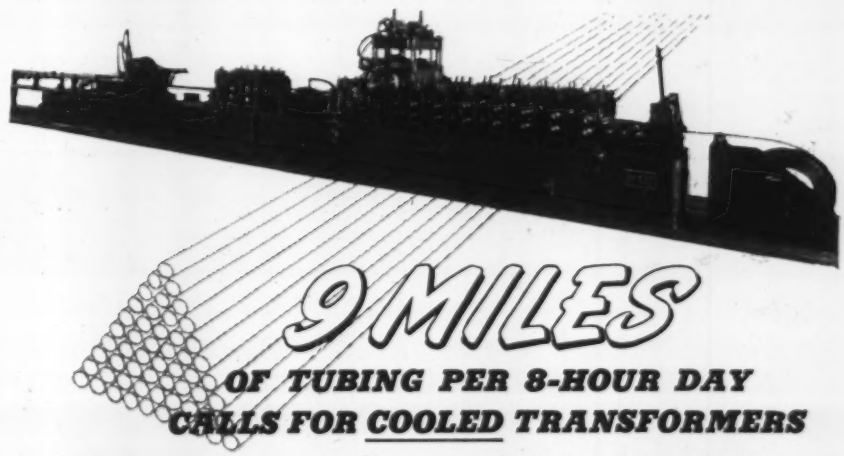
5000 tons, generating plant, Niagara Mohawk Power Corp., Albany, N. Y. to Bethlehem Steel Co. Stone & Webster Engineering Corp., Boston, engineer-contractor.

1800 tons, building, Security Insurance Co., New Haven, Conn., to Bethlehem Steel Co., Dwight Building Co., New Haven, general contractor.

1400 tons, addition, Grace Hospital, New Haven, Conn., to Bethlehem Steel Co.

1000 tons, chemical plant, Mathieson Hydrocarbon Chemical Co., Brandenberg, Ky., (800) Bethlehem Steel Co., Bethlehem, Pa. (200) International Steel Co., Evansville, Ind.; E. B. Badger & Sons Co., Boston, contractor-engineer.

1,000 tons, No. 49, New Jersey Turnpike, Hudson county, through ELL-Dorer Contracting



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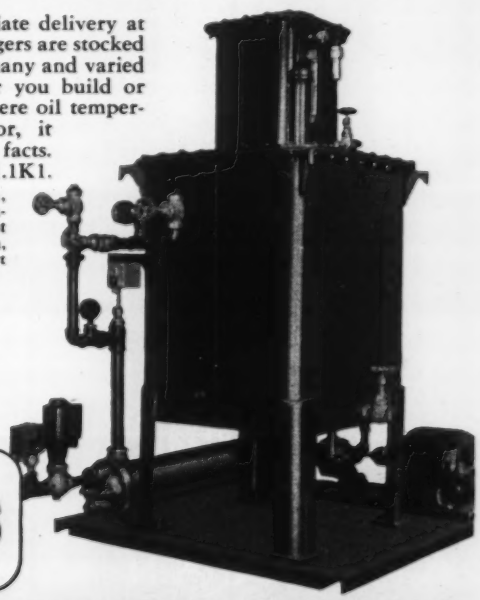

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Co., Irvington, N. J., to Harris Structural Steel Co., New York.

325 tons, students activities building, University of Connecticut, Storrs, Conn., to American Bridge Co., Pittsburgh; A. E. Stephens Co., Springfield, Mass., general contractor.

300 tons, telephone building, Levittown, N. Y., to Grand Iron Works Inc., New York.

250 tons, warehouse, Samuel Hurwitz Co., Boston, to A. O. Wilson Structural Co., Cambridge. Morris Construction Co., Lowell, Mass., general contractor.

250 tons, 3-story J. J. Newberry & Co. store, Spokane, Wash., to American Bridge Co., Portland, Oreg.

175 tons, three-span WF-beam bridge, Sudbury, Vt., to Vermont Structural Steel Co., Burlington; M. J. Burrington Jr., Bennington, Vt., general contractor.

150 tons, Waverly bridge, West branch, Sebasticook river, Pittsfield, Me., to American Bridge Co., Pittsburgh, through Bancroft & Marton Rolling Mills Co., Portland, Me.

100 tons or more, elementary school, Stoughton, Mass., to Builders Iron Works, Somerville, Mass.; bars to Concrete Steel Co., Boston; Tornabene Bros. Co., Newton, Mass., general contractor.

STRUCTURAL STEEL PENDING

3600 tons, galvanized transmission towers, Seattle Light department; bids in Sept. 12.

900 tons, apartment, Wynwood, Pa., bids closed.

850 tons, four buildings, Gulf Oil Corp., Philadelphia; bids Sept. 15

650 tons, four bridges, final section, Olneyville expressway, Providence, R. I.; bids Sept. 27, Providence.

600 tons, state bridge, Indiana county, Pa.; A. E. O'Block, Unity, Pa., low on general contract.

560 tons, repair shop, Metropolitan Transit Authority, Orient Heights, Boston; bids Sept. 18.

340 tons, two-span continuous welded girder bridge and single span rolled beam bridge as underpasses, Derby-Ansonia, Conn.; bids Sept. 18, Hartford, Conn.

250 tons, Dixmont state hospital, Allegheny county, Pa.; bids Sept. 27.

240 tons, Pennsybury high school, Bucks county, Pa.; Belli & Co., Trenton, N. J., low on general contract.

150 tons, 3-span steel span, North Santiam river, Oregon; VaDare Construction Co., Portland, Oreg., low, $46,645, to U. S. Engineer, Portland.

135 tons, shapes and bars, 113-foot twin-span continuous rolled beam bridge, Quinnipiac river, Wallingford, Conn.; bids Sept. 18, Hartford, Conn.

135 tons, station, Metropolitan Transit Authority, Orient Heights, Boston; bids Sept. 18.

Unstated, hangar, International airport, Anchorage, Alaska; general contract awarded to C. F. Lytle and Green Construction Co., Sioux City, Iowa, by Civil Aeronautics Administration, low $489,470.

REINFORCING BARS . . .

REINFORCING BARS PLACED

1500 tons, generating plant, Niagara Mohawk Power Corp., Albany, N. Y., to Truscon Steel Co., Youngstown. Stone & Webster Engineering Corp., Boston, engineer-contractor.

400 tons, chemical building, Mathieson Hydrocarbon Chemical Co., Brandenberg, Ky., to Bethlehem Steel Co., Bethlehem, Pa.; E. B. Badger & Sons Co., Boston, contractor-engineer.

400 tons, chemical plant, Doe Run, Ky., through Boston engineer-contractor, to Bethlehem Steel Co.

350 tons, building, Security Insurance Co., New Haven, Conn., to Bethlehem Steel Co., Bethlehem, Pa.; Dwight Building Co., New Haven, general contractor.

225 tons, associated students' building, Uni-

Convenient

At Hotel Cleveland you'll be convenient to *anywhere* you'll want to go in Cleveland. Hotel Cleveland is directly connected to Union Passenger Terminal, garage, Terminal office buildings.

Comfortable

Quiet, sleep-inviting rooms—all with radio, many with television. Spirited, colorful new decorations in rooms and lobbies.

Friendly

There's a cordial, hearty welcome . . . gracious, attentive service to greet all who enter the friendly doors of Hotel Cleveland.

HOTEL CLEVELAND

Cleveland, Ohio

versity of Washington, Seattle, to Bethlehem Pacific Coast Steel Corp., Seattle; Henrik Vallee, Seattle, general contractor.

210 tons, warehouse, Sears, Roebuck & Co., Boston, to Northern Steel Inc., Medford, Mass.; Thomas O'Connor & Co., Inc., Cambridge, general contractor.

100 tons, students activity building, University of Connecticut, Storrs, Conn., to A. D. Donald Co., Springfield, Mass. A. E. Stephens Co., Springfield, general contractor.

REINFORCING BARS PENDING

900 tons, state bridge work, Beaver county, Pennsylvania; bids Sept. 29; also 2600 tons of I-beam bridges.

500 tons, turbine and transformer installation, Hoover power plant, Department of Interior, Boulder City, Nev., Sept. 28.

305 tons, nine bridges, Danvers-Middleton-Topsfield-Voxford, Mass.; Savin Construction Co., East Hartford, Conn., general contractor.

280 tons, Umpqua National Forest project, Oregon; bids to Bureau of Public Roads, Portland, Sept. 27.

225 tons, youth service center, Seattle; general contractor to J. C. Boespflug Co., Seattle.

215 tons; bids Sept. 27, supply officer, Bureau of Reclamation, Cody, Wyo.

125 tons, Washington state highway span, Okanogan county; general contract to Everett McKellar, Chelan, Wash., low $145,764.

115 tons, two-span continuous welded girder bridge, Derby-Ansonia, Conn.; bids Sept. 18, Hartford.

PIPE . . .

STEEL PIPE PENDING

Unstated, 7600 feet 4 inch and accessories; bids to P. H. Woody, secretary, King County District No. 6, Auburn, Wash., Sept. 15.

CAST IRON PIPE PLACED

765 tons, 30-in. and 36-in. waterline, Metropolitan District Commission, Lynn, Mass., to Warren Pipe & Foundry Co., Phillipsburg, N. J.

PLATES . . .

PLATES PENDING

Unstated tonnage, elevated water tank, Logan Airport, Boston, Hammond Iron Works, Warren, Pa., low, $29,623.

RAILS, CARS . . .

RAILROAD CARS PLACED

Chicago & Eastern Illinois, 200 gondolas to its Danville, Ill., shops.

Great Northern, four baggage-express cars, to its St. Cloud, Minn., shops.

Vermont Central, two 30-cubic yard, 50-ton air dump cars, to Magor Car Corp., New York.

FERROALLOYS

(*Continued from page* 175)

Foundry Ferrochrome: (Cr 62-66%, C 5-7%). Contract, c.l., 8MxD, bulk, 22.0c per lb of contained Cr, c.l., packed 22.9c, ton 24.25c, less ton 26.0c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: (Cr 67-72%). Contract, carload, lump, bulk, max. 0.03% C 31.85c per lb of contained Cr, 0.04% C 29.75c, 0.06% C 28.75c, 0.10% C 28.25c-28.5c, 0.15% C 28.0c, 0.20% C 27.75c, 0.50% C 27.5c, 1% C 27.25c, 1.50% C 27.1c, 2% C 27.0c. Carload packed add 1.1c, ton lot add 2.2c, less ton add 3.9c. Delivered. Spot, add 0.25c.

"SM" Low-Carbon Ferrochrome: (Cr 62-66%, Si 4-6%, Mn 4-6%, C 0.75-1.25% max.). Contract, carload, lump, bulk 27.75c per lb of contained chromium, carload, packed 28.85c, ton lots 30.05c, less ton 31.85c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome, Nitrogen Bearing: Add 5c to 0.10% C low-carbon ferrochrome prices for approx. 0.75% N. Add 5c for each 0.25% of N above 0.75%.

Chromium Metal: (Min. 97% Cr and 1% Fe). Contract carload, 1" x D; packed, max 0.50% C grade, $1.03 per lb of contained chromium,

A BETTER FORK TRUCK

HEAVY DUTY LIFTRUK

5, 7½, 10 ton cap.

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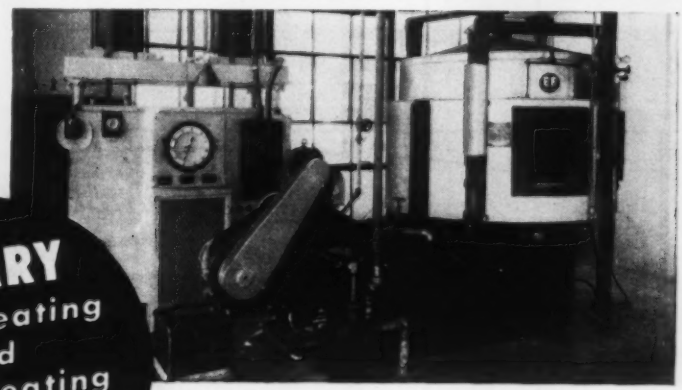
EF



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for any capacity requirement

The small inexpensive EF "Pan Dumping" rotary furnace pictured above, assures continuous, scale free and **uniform** heat treatment of bolts, screws, springs and other small parts. It has capacity for 250 lbs. per hour—is equipped with quench, atmosphere generator and automatic controls.

Other types of EF Rotary furnaces with capacities to 35,000 lbs. per hour or more, are used for heating ferrous and non-ferrous billets, and many other heating and heat treating processes.

Let EF engineers, with their wide experience in all phases of heat processing, work with **you** on **your** next job.

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TRADE MARK REGISTERED

Provides Positive Lubrication Upon Split-Second Demand

NON-FLUID OIL provides positive lubrication upon split-second demand because it does not require softening by frictional heat before it will feed and reduce friction.

Production goes up and lubricating and maintenance costs go down with NON-FLUID OIL—because it lubricates instantly until entirely used up, and does not drain away from bearings when machinery is stopped.

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292 Madison Avenue, New York 17, N. Y. Works: Newark, N. J.

WAREHOUSES: Atlanta, Ga. • Birmingham, Ala. • Charlotte, N. C. • Columbus, Ga. • Greensboro, N. C. • Greenville, S. C. • Chicago, Ill. • Detroit, Mich. • Providence, R. I. • St. Louis, Mo.

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Singles from $4.00
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PITTSBURGH 30, PA.
JOSEPH F. DUDDY, MANAGER

ton lot $1.05, less ton $1.07. Delivered. Spot, add 5c.

Silicon Alloys

25-30% Ferrosilicon: Contract, carload, lump, bulk, 17.00c per lb of contained Si; packed 18.40c; ton lot 19.50c, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 11.3c per lb of contained Si, carload packed 12.9c, ton lot 14.35c, less ton 16c. Delivered. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max.) Add 1.3c to 50% ferrosilicon prices.

75% Ferrosilicon: Contract, carload, lump, bulk, 13.5c per lb of contained Si, carload packed 14.8c, ton lot 15.95c, less ton 17.2c. Delivered. Spot, add 0.8c.

80-90% Ferrosilicon: Contract, carload, lump, bulk, 14.65-15.0c per lb of contained Si, carload packed 15.9c, ton lot 16.9c, less ton 18.05c. Delivered. Spot, add 0.25c.

Low-Aluminum 85% Ferrosilicon: (Al 0.50% max.). Add 0.7c to 85% ferrosilicon prices.

90-95% Ferrosilicon: Contract, carload, lump, bulk, 16.5c per lb of contained Si, carload packed 17.7c, ton lot 18.65c, less ton 19.7c. Delivered. Spot, add 0.25c.

Low-Aluminum 90-95% Ferrosilicon: (Al 0.50% max.). Add 0.7c to above 90-95% ferrosilicon prices.

Silicon Metal: (Min. 97% Si and 1% max. Fe). C.l. lump, bulk, regular 19.0c per lb of Si, c.l. packed 20.2c, ton lot 21.1c, less ton 22.1c. Add 1.5c for max. 0.10% calcium grade. Deduct 0.4c for max. 2% Fe grade analyzing min. 96% Si. Spot, add 0.25c.

Alsifer: (Approx. 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 8.65c per lb of alloy, ton lots packed 10.05c, 200 to 1999 lb 10.40c, smaller lots 10.90c. Delivered. Spot up 0.5c.

Briquetted Alloys

Chromium Briquets: (Weighing approx. 3⅜ lb each and containing exactly 2 lb of Cr). Contract, carload, bulk, 13.75c per lb of briquet, carload packed 14.45c, ton lot 15.25c, less ton 16.15c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx. 3 lb and containing exactly 2 lb of Mn). Contract, carload, bulk 10.45c per lb of briquet, c.l. packaged 11.25c, ton lot 12.05c, less ton 12.45c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx. 3½ lb and containing exactly 2 lb of Mn and approx. ½ lb of Si). Contract, c.l. bulk 10.30c, per lb of briquet, c.l. packaged 11.1c. ton lot 11.9c, less ton 12.8c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx. 5 lb and containing exactly 2 lb of Si). Contract, carload, bulk 6.15c per lb of briquet, c.l. packed 6.95c, ton lot 7.75c, less ton 8.65c. Delivered. Spot, add 0.25c.

(Small size—weighing approx. 2½ lb and containing exactly 1 lb of Si). Carload, bulk 6.30c, c.l. packed 7.10c, ton lot 7.90c, less ton 8.80c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each) 95.00c per pound of Mo contained, f.o.b. Langeloth, Pa.

Calcium Alloys

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%.) Contract, carload, lump, bulk 19.25c per lb of alloy, carload packed 20.05c, ton lot 21.55c, less ton 22.55c. Delivered. Spot add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.50-3%). Contract, carload, lump, bulk 17.9c per lb of alloy, carload packed 19.1c, ton lot 21.0c, less ton 22.5c. Delivered. Spot add 0.25c.

Titanium Alloys

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max., Si 4% max., C 0.10% max.) Contract, ton lots 2" x D, $1.40 per lb of contained Ti; less ton $1.45. (Ti 38-43%, Al 8% max., Si 4% max., C 0.10% max.) Ton lot $1.28, less ton $1.35, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot, add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract $167 per net ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi river and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C

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For special gears in larger sizes—exact duplicate gears for replacements—for every heavy-duty industrial gear application—look to SIMONDS GEAR where specialty gears for heavy industry have been a custom service for more than 50 years. Within easy shipping distance of many heavy industry plants—with a personalized service designed to meet your most exacting specifications—SIMONDS GEAR provides an unusually prompt and efficient service on even the most unusual gear requirements. Sizes range up to 145" dia. in all popular gear-making materials. Send your inquiry today and get acquainted with SIMONDS GEAR Service.

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SIMONDS GEARS

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LIBERTY at 25TH — PITTSBURGH 22, PA

3-4.5%.) Contract, $183 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

Vanadium Alloys

Ferrovanadium: Open-hearth Grade (Va 35-55%, Si 8-12% max., C 3-3.5% max.). Contract, any quantity, $2.90 per lb of contained Va. Delivered. Spot, add 10c. **Crucible-Special Grades** (Va 35-55%, Si 2-3.5% max., C 0.5-1% max.), $3. **Primos and High Speed Grades** (Va 35-55%, Si 1.50% max., C 0.20% max.) $3.10.

Grainal: Vanadium Grainal No. 1, 93c per lb; No. 6, 63c; No. 79, 45c, freight allowed.

Vanadium Oxide: Contract, less carload lots $1.20 per lb contained V_2O_5, freight allowed. Spot, add 5c.

Tungsten Alloys

Ferrotungsten: (70-80%). Contract, 10,000 lb W or more, $2.25 per lb of contained W; 2000 lb W to 10,000 lb W, $2.35; less than 2000 lb W, $2.47. Spot, add 2c.

Tungsten Powder: (W 98.8% min.). Contract or spot, 1000 lb or more, $2.90 per lb of contained W; less than 1000 lb W, $3.

Zirconium Alloys

12-15% Zirconium Alloy: (Zr 12-15%, Si 39-43%, Fe 40-45%, C 0.20% max.). Contract, c.l., lump, bulk 6.6c per lb of alloy, c.l. packed 7.35c, ton lot 8.1c, less ton 8.95c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max.). Contract carload, lump, packed 20.25c per lb of alloy ton lot 21c, less ton 22.25c. Freight allowed. Spot, add 0.25c.

Boron Alloys

Ferroboron: (B 17.50% min., Si 1.50% max., Al 0.50% max., C 0.50% max.). Contract, 100 lb or more, 1" x D, $1.20 per lb of alloy. Less than 100 lb $1.30. Delivered. Spot, add 5c. F.o.b. Washington, Pa., prices 100 lb and over are as follows: Grade A (10-14% B) 75c per pound; Grade B (14-18% B) $1.20; Grade C (19% min. B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si), $4.25 per lb contained B, f.o.b. Philo, O., with freight not to exceed railroad freight allowed to destination.

Bortam: (B 1.5-1.9%). Ton lots, 45c per lb; smaller lots, 50c per lb.

Carbortam: (B 1 to 2%) contract, lump carloads 9.50c per lb, f.o.b. Suspension Bridge, N. Y., frt allowed same as high-carbon ferrotitanium.

Other Ferroalloys

Ferrocolumbium: (Cb 50-60%, Si 8% max., C 0.4% max.). Contract, ton lot, 2" x D, $3.50 per lb of contained Cb, less ton $3.55. Delivered. Spot, add 10c.

Ferrotantalum—Columbium: (Cb 40% approx., Ta 20% approx., and Cb and Ta 60% min., C 0.30 max.) ton lots, 2" x D, $2.67 per lb of contained Cb plus Ta, delivered; less ton lots $2.72.

CMSZ Mixes: (No. 4—Cr 45-49%, Mn 4-6%, Si 18-21%, Zr 1.25-1.75%, C 3-4.5%; No. 5—Cr 50-56%, Mn 4-6%, Si 13.50-16.0%; Zr 0.75-1.25%, C 3.50-5%). 12 M x D, carload packed 19.0c per lb of material, ton lot 19.75c, less ton 21.0c. Delivered.

Silcaz Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, B 0.55-0.75%). Carload packed, 1" x D, 43c per lb of alloy, ton lot 45c, less ton 47c. Delivered.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx). Contract, carload, packed, ½" x 12 M, 16.5c per lb of alloy, ton lots 17.50c, less ton 18.5c. Delivered. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 17.0c per lb of alloy; ton lots 18.0c; less ton lots 19.50c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed, 14.25c per lb of alloy; ton lots 15.75c; less ton lots 17.00c, f.o.b., Niagara Falls, N. Y.; freight allowed to St. Louis.

Simanal: (Approx. 20% each Si, Mn, Al). Lump, bulk, carload 11.00c. Ton lots, bulk 11.50c, packed 11.75c. Less ton lots, packed 12.25c per lb of alloy, f.o.b. Philo, O., with freight not to exceed railroad freight allowed to destination.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $3 for each 1% of P above or below the base); carloads, f.o.b. seller's works, Mt. Pleasant, or Siglo, Tenn., $65 per gross ton.

Ferromolybdenum: (55-75%). Per lb, contained Mo, f.o.b. Langeloth and Washington, Pa., furnace, any quantity $1.13.

Technical Molybdic-Oxide: Per lb, contained Mo., f.o.b. Langeloth and Washington, Pa., packed in bags containing 20 lb of molybdenum, 95.00c.

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IN THE
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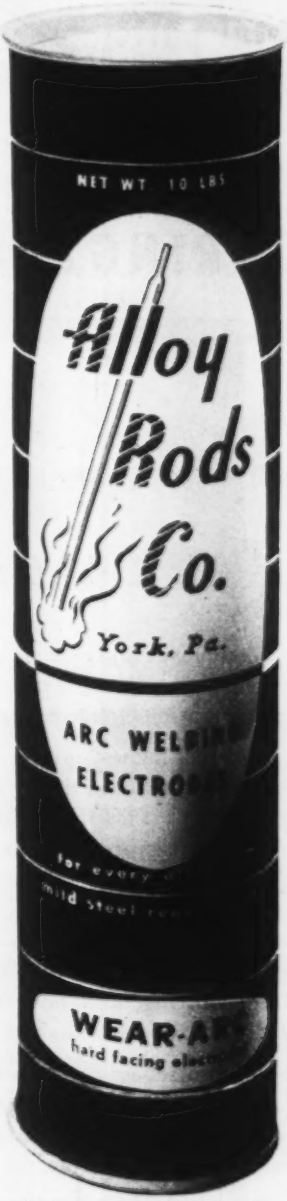
Moisture, dirt and grease proof . . . Easy to stock convenient 10 lb. size



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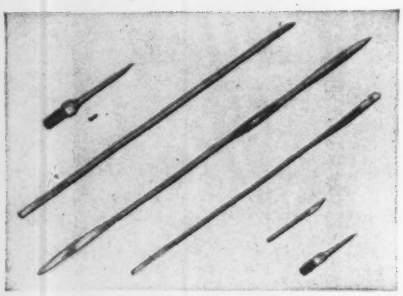

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Metalworking Briefs

CONSTRUCTION, ENTERPRISE ORGANIZATIONAL CHANGES

Arkansas

Victor Metal Products Corp., Brooklyn, N. Y., received a low bid from Peterson, Garbi & Joseph, North Little Rock, Ark., for an industrial building in Newport, Ark. J. A. Murphy, Chico, Calif., is the architect.

California

Allegheny Ludlum Steel Corp. began expansion of its Los Angeles forge plant facilities to increase output of stainless and high alloy steel forgings for the aircraft industry. New annealing furnaces are being installed, hammers are being rebuilt, and additions to office and shop area are started.

California

Fenton Mfg. Corp., manufacturer of welded steel products, started construction of a plant in El Monte, Calif.

California

Virco Mfg. Corp., Los Angeles, manufacturer of school equipment, public seating, and outdoor furniture, moved to a larger plant.

California

Interstate Engineering Corp., Los Angeles, increased production capacity of its vacuum cleaner assembly line from 100,000 to 250,000 units annually.

California

Krim-Co Corp., Chicago, will build a $200,000 plant in Oakland, Calif.

California

Beatty Safway Scaffold Inc., manufacturer of steel scaffolds, grandstands and rolling towers, opened a manufacturing and distributing plant in San Francisco.

California

Rinshed-Mason Co., Detroit, purchased a plant in Anaheim, Calif., which they will convert to manufacturing and warehousing of automotive and industrial finishes, automotive refinishing materials and allied products. Edward S. Hawkins is general manager of the company's new western division.

California

Budget Pack Inc., Los Angeles, will build an $800,000 plant on a site in Buena Park, Calif. Facilities located at two Southern California plants and one Modesto, Calif., plant will be centered in the new plant which will enable the firm to triple fruit-packing capacity.

District of Columbia

Potomac Electric Power Co., Washington, is building an $8 million addition to its power plant on Benning road.

Illinois

Columbus-McKinnon Chain Corp., Tonawanda, N. Y., is acquiring the plant, equipment and inventory of Dixon Chain Mfg. Co. Inc., Dixon, Ill.

Kentucky

Phillip Morris & Co. Ltd., Richmond, Va., will spend $8 million in expanding its manufacturing facilities in Louisville, Ky. Plans include a factory building and equipment, warehouse and additional facilities. W. M. McFadded is plant manager.

Kentucky

A $1 million compressor station is being erected near Load, Ky., in connection with the 1750-mile, 26-inch Texas-New York natural gas pipeline which is being laid by the **Tennessee Gas Transmission Co.**

Kentucky

Louisville Refining Co., Louisville, will start work soon on a $2 million "cat" cracking plant for conversion of 65 per cent crude oil into gasoline.

Louisiana

Effective Oct. 1, **Raybestos-Manhattan Inc.** announces removal of its New Orleans office and warehouse from 1009 Camp St. to 920 Calliope St.

Maryland

Cambridge Wire Cloth Co., Cambridge, Md., appointed the following distributors for its woven wire slings: Montana Hardware Co., Butte, Mont.; Frank Morrison & Sons Co., Cleveland; Joseph R. Tway Co., Indianapolis; Bard Steel & Mill Supply Co., Kalamazoo, Mich.; Bettis Sales Corp., Houston; Syracuse Supply Co., Syracuse; Gardner Denver Co., Denver; Intermountain Equipment Co., Boise, Idaho; Jeffersonville Boat & Machine Co. Inc., Jeffersonville, Ind.; Moore-Handley Hardware Co. Inc., Birmingham; Shadbolt & Boyd Co., Milwaukee; Standard Supply & Hardware Co. Inc., New Orleans; Williamson & Wilmer Inc., Richmond, Va.; Franklin Supply Co. and McMaster-Carr Supply Co., Chicago; J. B. Engineering Sales Co. and Mansaver Industries Inc., New Haven, Conn.; James Walker Co., Anderson & Ireland Co. and Carey Machinery & Supply Co., Baltimore.

Michigan

Jesse W. Eakins Co., 3105 E. Brand Blvd., Detroit, was named sales representative in the Detroit area by Ward Leonard Electric Co.

Missouri

Pure Carbonic Co., a division of Air Reduction Co. Inc., New York, plans erection of a $1 million dry ice plant in Fairfax, Mo.

New York

The Buffalo plant of **American Brass Co.** filed plans with the city to install a new pit at an estimated cost of $25,000.

New York

A new $500,000 office building for **Art Metal Construction Co.,** Jamestown, N. Y., is planned. A portion of the present foundry will be demolished to make room for the new building. Warren Construction Co., Jamestown, has the contract.

New York

Electro Refractories & Alloys Corp., Buffalo, is increasing its silicon carbide crushing facilities at an approximate cost of $75,000.

New York

General Metals Corp., Adel Division, has closed its offices in Stamford, Conn., and opened new offices in the Stevens Bldg., 42 Third Ave., Mineola, N. Y.

New York

General Power Plant Corp., New York, appointed Spurgeon Co., Van Dyke, Mich., as sales representative

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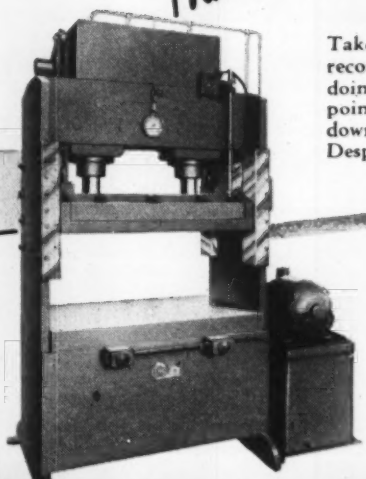

TWO CYLINDER TYPE—Tons capacity: 60, 85, 100. Platen and bolster, maximum usable size: F to B, R to L, 36" x 60". Stroke: 6", 11". Bed: fixed. Controls: Manual, Semi-Automatic, Fully Automatic for cycled operation.

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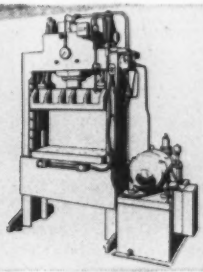
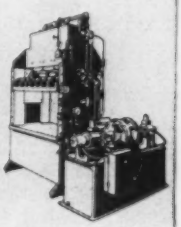
ONE CYLINDER TYPE—Tons capacity: 25, 50, 75, 100, 125, 150. Platen and bolster, maximum usable size: 24" F to B, 36" R to L. Stroke: 6", 11", 18". Bed adjustment: increments of 6". Controls: Manual, Semi-Automatic, Fully Automatic for cycled operation.





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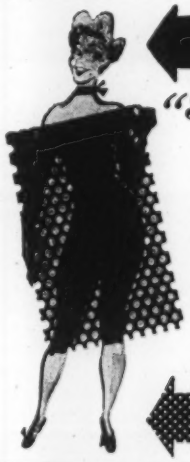

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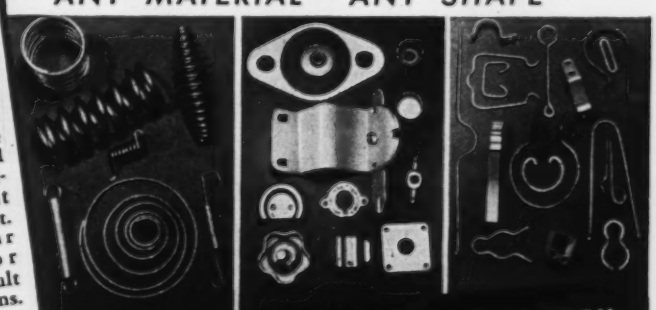

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